DG .com

Blade bonanza Dell and IBM this week will become the latest big names to join the blade server market. PAGE 10.

Self-styling Sometimes doing it yourself is the best way to manage Cisco routers, says Virginia Tech's Brian Jones. PAGE 30.

NetworkWorld

The leader in network knowledge ■ www.nwfusion.com

November 25, 2002 ■ Volume 19, Number 47

Hospital sounds alarm after 3-day struggle

■ BY ANN BEDNARZ

BOSTON — The healthcare industry is sitting up and taking notice after one of Massachusetts' best-known hospitals suffered network slowdowns and interruptions for more than three days earlier this month.

The incident at Beth Israel Deaconess Medical Center prompted its CIO to go public with the network problems, in the hope of educating other healthcare IT executives that might have similarly vulnerable networks.

Dr. John Halamka is CIO of CareGroup Healthcare System and an advocate of healthcare computing. Beth Israel Deaconess is the keystone asset of the CareGroup healthcare network, which consists of five Massachusetts hospitals and more than 1,800 physicians. The IT infrastructure at

See Hospital, page 59

Industry woes dampen Comdex

■ BY NETWORK WORLD STAFF

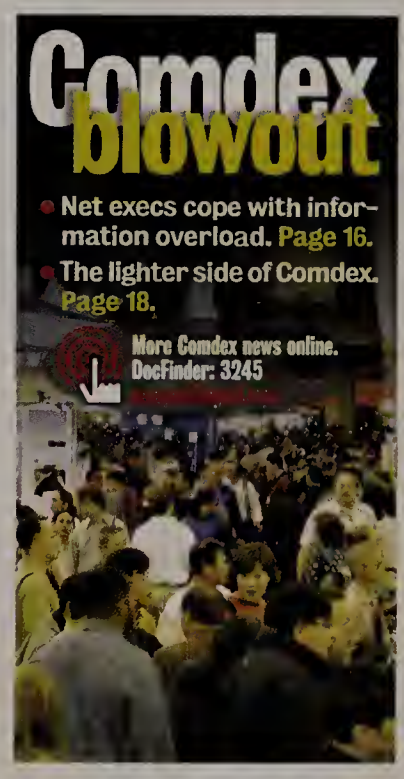
LAS VEGAS — The chill in the air last week here was not just from the desert's cool autumn winds — it also came from the feeling that the once-red-hot technology industry continues to suffer through an ice age.

Specifically, Comdex 2002 saw about half the number of attendees (see graphic, page 16) and exhibitors, down to 1,100 vendors from more than 2,000 just two years ago. And while wireless network, Web services and mobile computing products, along with a new, unified Linux specification (see related story, page 16) all made news, there was no overriding buzz — save to talk about the poor tech economy and how far Comdex has fallen. It's a far cry from the bombastic wackiness that used to pervade the show.

Still, executives repeatedly tried to put the best face on it all.

National Semiconductor Chief Executive Brian Halla said —

See Comdex, page 16



FEATURE

Room boxes

Vendors are making noise with mega-appliances that do it all — they slice and dice IP packets any way you want, and let you virtualize network services.

Page 42

Search is on for Web services standards

Three standards bodies are hard at work creating protocols to manage the technology.

■ BY JOHN FONTANA

Three standards bodies are cooperating on the complex task of creating protocols and architecture guides to manage Web services, the last major stumbling block deterring development and widespread adoption of the technology.

Experts say the effort will need to overcome historic difficulties in getting standard network management protocols widely and consistently deployed.

The World Wide Web Consortium (W3C), the Organization for the Advancement of Structured Information Standards (OASIS) and the Distributed Management Task Force (DMTF) are working on separate pieces of a puzzle that will let corporations manage Web services components internally and across

See Web services, page 14

Web services spending

In a recent survey, about 400 IT executives were asked to name the Web services technologies they are considering.

* Respondents could give more than one answer.

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Reliable systems start with reliable server software and rock-solid hardware. Microsoft has joined with leaders in the high-availability segment, such as Stratus Computer, to deliver fault-tolerant software and hardware configurations for mission-critical computing with up to 99.999% availability. Today, Windows®-based fault-tolerant solutions support banks, public safety operations (911 phone systems), health care systems, and other organizations which require the highest level of reliability.

In addition, Microsoft has partnered with leading server OEMs, network equipment vendors, and ISVs to deliver the Microsoft Systems Architecture (MSA) program. MSA provides prescriptive guidance for configuring a data center caliber server infrastructure that is optimized for Windows and has been lab-implemented, partner-integrated, and pretested. Ultimately, MSA is designed to give you high-availability systems, networking, and storage with faster implementation, predictable costs, and reduced risk.

The Microsoft Windows 2000 Server family also offers two important reliability-enhancing features: Cluster Service and Network Load Balancing. With Cluster Service, if one server stops functioning its workload is automatically transferred to the other server, avoiding any downtime. Network Load Balancing works by spreading incoming client requests among a number of servers linked together to support a particular application, so no matter how many requests are received the server is always available.

servers down, will it?”

People and process

Technology cannot do it alone. Getting the highest level of availability from any operating system, including Windows, requires an IT environment built around sound operating guidelines and staffed by well-trained employees. To help you build such an environment, Microsoft and a broad range of third-party partners offer a collection of training and support programs. One excellent example of such a program is the Microsoft Operations Framework (MOF) which is an operational guidance suite that provides you with technical guidance for helping achieve mission-critical system reliability, availability, manageability, and security on Microsoft products and technologies. To help you find the best people, Microsoft certification programs identify individuals and service providers with the expertise you need to help get the system availability your organization requires.

“The reliability of our 911 computer-aided dispatch system supports our ability to effectively save lives. The fault-tolerance provided by Stratus’ ftServer running Microsoft Windows 2000 Advanced Server provides the near 100 percent reliability and availability we need for a system where seconds can be of critical importance.”

—Deputy Chief Tracy Jarman,
San Diego Fire & Life Safety Services

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News

Infrastructure

Net.Worker

Enterprise Applications

Service Providers

The Edge

Technology Update

Opinions

Management

Workers are urged to find a balance between work and home life. How do you juggle the two? See page 48.

EMMANUEL KERNER

Features

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Interactive

Comdex in review

If you couldn't make it to Vegas — or did and were simply too busy — get all the news you need from the show at our Comdex breaking-news page. We'll give you the details on all the important announcements, and a view from the show floor via our reporters' Weblog.
DocFinder: 3140

Holiday shopping made easy

Wondering what to get your favorite techies for the holidays? We tested dozens of fun and functional gifts and gadgets for our annual Cool Yule Tools Holiday Gift Guide. Make it easy on yourself and see what we think will be hot gifts.
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Seminars and Events

Futureproof your network

Are you considering upgrading to 10G Ethernet or folding voice into your IP network? Attend Network World's Town Meeting, "State of the LAN/MAN: Re-engineering for Today's Enterprise Demands," to discover how to expand your LAN.
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Columnists

Compendium

Putting programmers through the ringer
Fusion Executive Editor Adam Gaffin says programmers are being asked some pretty deep questions when interviewing for jobs these days.
DocFinder: 3236

Help Desk

Token ring to Ethernet migration
Columnist Ron Nutter helps a user who needs advice on how to migrate a bank's LAN from token ring to Ethernet.
DocFinder: 3237

SOHO Tech

Know everybody's name
Columnist James Gaskin tests a product that lets you turn a pile of business cards into a database. **DocFinder: 3238**

View from the Edge

A call for change
The Edge Managing Editor Jim Duffy tells you why the RBOCs want the FCC to change its unbundled network element-platform rules.
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News Bits

IETF looks to streamline work

■ The Internet Engineering Task Force debated the group's status and future direction last week at a meeting in Atlanta. At issue are concerns that the Internet's premier standards-setting body is taking too long to develop useful protocols and is not responsive enough to real-world needs. The IETF took five years to develop a set of protocols to support interoperability of instant-messaging systems. IETF members are complaining about the time it takes IETF leaders to approve working group documents and the lack of information about how IETF leaders make decisions to approve or reject these documents. The IETF also has lost some leaders because the workload is so heavy that these volunteer jobs essentially have become full-time positions. No decisions about changing the IETF's processes were made, but the group is discussing various proposals on its mailing list at www.ietf.org.

■ TheGoodTheBadTheUgly

There's no place like Homeland. The IT industry could expect a boost as a result of the newly formed Department of Homeland Security, according to Input. The research firm says IT spending will be at least $2.1 billion in the government's 2003 fiscal year, as the organization looks to sort out database, wireless and other systems. ➤

Was it hot air? Here's how an executive at a network vendor that shall remain nameless explained the company's decision to change its name and revamp its product line: "We were running into a viability headwind."

Same old, same old. "We continue to see the same types of vulnerabilities in newer versions of products that we saw in earlier versions," said Richard Pethia, director of CERT Centers at Carnegie Mellon University's Software Engineering Institute, testifying last week before the U.S. House of Representatives. "Until customers demand products that are more secure or there are changes in the way legal and liability issues are handled, the situation is unlikely to change."

COMPENDIUM

Lazy Webmasters?

Eric Rescorla has studied how quickly security holes on Web sites get fixed after the holes are publicized. In general: They are not quickly fixed at all.

Read more at www.nwfusion.com, DocFinder: 3243.

Founder Charles Wang departs CA

■ After 25 years with the company, Charles Wang last week stepped down as chairman of Computer Associates. President and CEO Sanjay Kumar will succeed Wang. Wang also left his seat on the board of directors, and the board in return named Wang to the honorary position of chairman emeritus. Wang founded CA in 1976 with a staff of four and one software product, CA-SORT. From there, Wang led the company to become the first software vendor to reach $1 billion in sales in 1989 and to offer more than 1,200 products this year — with its Unicenter network management software remaining within the top five in its market. Kumar joined CA in 1987 and has served as president and CEO since August 2000.

Spy agency, Lancope join forces

■ Intrusion-detection system vendor Lancope is investing an undisclosed sum of money in a joint-development project with the nation's high-tech spy agency, the National Security Agency, to build a new type of IDS appliance. The appliance would make use of visualization technology pioneered at the Naval War College by Dave Ford, special assistant to the Secure Network Technology Office at the NSA in Fort Meade, Md. Code-named Terminator, the appliance will display incoming datastreams in color to indicate anomalies rather than signature-based attacks. Terminator, expected to be available as a prototype in six months, will be used by the government initially and later sold by Lancope commercially.

Don't look for .Net 2003 in your stocking

■ The final release date of Windows .Net Server 2003 has slipped yet again as Microsoft announced last week that the operating system will be available in April. The second release candidate, which is a test version of the software before final release, will be available next week. The final release was scheduled for year-end, after more than a year delay from its original date. Microsoft said the operating system will be released in conjunction with Visual Studio .Net 2003, the company's set of development tools to support its .Net Web services initiative. The highlight of Windows .Net Server 2003 is its support of the .Net framework, which is the run-time environment similar to a Java Virtual Machine for Web services created with Visual Studio .Net.

GAO report taps biometrics best bets

■ The General Accounting Office last week issued a lengthy report on possible use of biometrics technologies for purposes of border-crossing identification and visa-document processing, two areas where the Patriot Act passed last year by Congress suggested biometrics be used. The report says that of the seven types of biometrics examined, the most promising for border security are fingerprint, facial and iris recognition. The report noted that such a system would cost several billion dollars to implement and run.

Alcatel warns of back door in switch

■ A security vulnerability in Alcatel SA's OmniSwitch 7000 series LAN switches could lead to an attacker gaining full control over the switches. It affects Alcatel OmniSwitch 7700 and 7800 switches running the Alcatel Operating System Version 5.1.1, Alcatel said in a security advisory last week. In the vulnerable systems, a telnet server listens for connections on TCP Port 6778 and accepts connections without requiring a password, creating a back door that provides full administrative control over the switch. The telnet access was used for development of the product, and Alcatel forgot to remove it "due to an oversight," the company said. Users of vulnerable switches should immediately create an access control list blocking all access to Port 6778 on the switch, Alcatel said. A patch to close the back door also is available.

BlackBerry maker loses patent case

■ Research In Motion, which sells the BlackBerry wireless e-mail device, has lost a court case brought by a company called NTP, which alleged that RIM's products and services infringed on NTP patents. RIM said it will challenge the verdict. A Virginia jury ordered RIM to pay $23 million in damages, a figure that could be increased if it were to be found that RIM "willfully" infringed the patents. NTP filed a complaint in November 2001, alleging that certain RIM products infringed on patents NTP holds covering the use of radio-frequency wireless communications in e-mail systems.

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Blades begin to make their mark

■ BY DENI CONNOR

ROUND ROCK, TEXAS — As Dell and IBM this week become the latest major vendors to ship blade servers — Hewlett-Packard was first — customers and industry analysts say they are beginning to see signs of what vendors have promised all along: that the compact machines will revolutionize computer network design.

Blades offer power and memory similar to that available in typical 1U (1.75-inch-high) servers, but squeeze vertically into chassis, which include cabling, fans and power supplies typically found on individual servers. The chassis fit into racks that can accommodate hundreds of blades, depending on the vendor. So for customers, blades can help to simplify server setups, save space and, with some models, cut down on heat through the use of low-power processors.

Blades are going to be big business, says IDC, which predicts that one in every five servers that ship by 2006 will be blade-based.

Analysts say blade sales could eclipse those of 1U servers, which last year accounted for 45% of rack-optimized servers sold and about one-third of all servers sold.

"The sweet spot for blades in any rack-dense environment is going to be the one- to four-processor server because it's a more efficient packaging design," says David Freund, an analyst for Illuminata. "Blades will become the de facto standard."

Jamie Gruener, a senior analyst with The Yankee Group, agrees. "Blades are going to short circuit and circumvent the 1U market pretty aggressively in late 2004, especially in the large enterprise. It has all the signs of becoming a revolution."

Outsourcing company Centerbeam in Santa Clara is among the believers.

"Our company is 3 years old, and where we started out with 6U, then 3U, then 1U servers, now we've gone to blades," says Glenn Ricart, Centerbeam's CTO and a founder. "Each time, we've saved on space, power and cabling."

Centerbeam uses HP's BL p-Class blades to host back-up activities for its customers.

"Not only will we see the blade server trend continue, but it's forming the whole basis for a new way servers will be installed," Ricart says. "Looking forward, the information infrastructure provided by a data center will be cages in which you can install the server blades you need, so the common power supplies will change and the cabling will be replaced by the buses inside the cages."

TERC, a nonprofit research and development company in Cambridge, Mass., is another early blade customer.

"I am using [blades] to replace older 1U servers and for applications where I would otherwise use 1U servers," says Carl Alexander, senior systems and network administrator at TERC. "I'll continue, [though], to buy 1U servers for applications that require more storage, more computing power or both."

Blades only contain internal storage or connect to network-attached storage, unlike 1U servers, which can attach to external arrays or Fibre Channel-based storage area networks (SANs). Vendors all promise they will support external RAID and SAN storage in upcoming implementations.

TERC runs a DNS server, mail server and Dynamic Host Configuration Protocol server on blades from RLX Technologies.

TERC is a classic example of the kind of customer that blade makers initially sought, along with carriers and ISPs, in that they require many servers in a small space where overheating of machines is a concern. Early blades from RLX, and companies no longer in the blade business, such as FiberCycle and Racemi, were designed with low-power processors.

With the telecom meltdown, blade makers have extended or entirely shifted their focus to corporate networks' Web and midtier application servers. The newer blades tend to feature higher-powered processors.

Dell's new PowerEdge 1655MC is a two-processor Pentium III blade that runs at 1.26 to 1.4 GHz and starts at $1,500. It is comparable to products from HP and IBM.

Some blades are even finding their way into high-end application environments.

"We have a 240-processor cluster made up of RLX blades that sits in one rack," says Wu-chun Feng, research and development team leader at Los Alamos National Laboratory in New Mexico. "It was very important that the [blade's] power dissipation was low so we could get higher density. We are space-limited in our environment and don't have a specially cooled machine room."

While a few vendors, such as Egenera, are targeting high-end data center applications, industry watchers are skeptical about how big a business that will be.

"You might see blades in the back end, but the data center won't be the sweet spot," Illuminata's Freund says. "The back end tends not to be large volumes of servers and more suited for running Oracle 9i RAQ or IBM's DB2."

While blades are supposed to be simple, observers say that integrating blades into networks isn't yet a snap.

"Customers need to be very careful about large-scale investments in blades until there is more of a standard," Yankee Group's Gruener says. "The way blades fit in the chassis so that a customer can intermix them needs to be standardized. If you buy a rack in some cases, it needs to be occupied by the same [vendor's] blades and chassis'."

Web application hosting company Zapatec in Berkeley, Calif., welcome such heterogeneity.

"The ability to have multiple suppliers [in a rack] for what will hopefully become a commodity would be an enormous benefit to us," says Ramaswamy Aditya, the company's CTO.

Another lingering issue regarding blades is management. While blades promise to simplify server management in that vendors typically offer software for provisioning applications across chassis or racks of blades, customers would like to be able to manage blades and other types of servers, regardless of vendors, in a consistent manner. Some vendors, such as Dell and IBM, are off to a fast start in this area.

"We wouldn't purchase equipment we had to actively manage unless the management interfaces were standards-based," Aditya says. ■

Blade sampler

Vendors are offering blade servers, which fit into $1,800 to $3,000 chassis, to run everything from Web applications to data center applications.

Vendor	Product	Processor	Number of processors/ Speed	Storage (G bytes)	Number of blades per chassis	Price
Dell	PowerEdge 1655 MC	Pentium III	2/1.26 - 1.4 GHz	146	6	$1,500
Egenera	BladeFrame Pblade - 2	Xeon	2/2.2 - 2.8 GHz	0	24	$6,900
	BladeFrame Pblade - 4	Xeon MP	4/1.4 - 1.6 GHz	0	24	$30,000
HP	BL e-Class	Pentium III	1/700 - 800 GHz	30 - 40	20	$1,800
	BL p-Class	Pentium III	2/1.4 GHz	144	8	$2,540
IBM	eServer	Xeon	2/2 - 2.4 GHz	144	14	$1,880
RLX	ServerBlade 1200i	Pentium III-M	1/1.2 GHz	120	12	$1,530
	ServerBlade 800i	Pentium III low-voltage	1/800 MHz	80	24	$1,250
	ServerBlade 667	Transmeta	1/677 MHz	80	24	$1,000

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IBM launches WebSphere upgrade

■ BY ANN BEDNARZ

SOMERS, N.Y. — This week IBM will begin shipping a new version of its application server — which is to become the underlying platform for Big Blue's entire software line. The new version includes autonomic computing features aimed at helping customers lower administrative costs and optimize infrastructure performance and availability.

For example, WebSphere Application Server Version 5.0 includes self-configuring features. The application server can adjust applications based on how they are being used, IBM says.

WebSphere can protect servers by screening out malicious requests, IBM says. In the self-healing department, WebSphere can repair components while handling workload, and interrupt or restart an application without human intervention.

Gaining ground

IBM captured **31%** of the $1.18 billion application server market in 2001 while leader BEA Systems had 34%, according to Gartner.

These features complement autonomic capabilities that IBM recently incorporated into its Tivoli Systems management software and DB2 database products. Autonomic computing is a key component of IBM's strategy for e-business on demand, whereby companies can access computing resources as though they were utilities and pay for only the processing power they use.

IBM CEO Sam Palmisano last month publicly put his weight behind the utility concept. He told an audience of IBM's largest customers that IBM is investing $10 billion in technology and services to enable e-business on demand.

Tou-Soua Heu, the lead technologies specialist at The St. Paul Companies, is a bit skeptical about the reality of autonomic features, but likes the theory. Administrators spend a lot of time configuring WebSphere to match application requirements. "Autonomic capabilities would enable us to step back a little bit and focus on other tasks," Heu says.

The St. Paul, Minn., insurance company plans to migrate its WebSphere Application Server Version 4.0 instances to the 5.0 upgrade in the first quarter of next year, and then migrate its Version 3.5 instances to 5.0 shortly after, Heu says. Driving the company's decision to upgrade are application development requirements for Enterprise JavaBeans 2.0 — support for which is built into 5.0 — and looming support-expiration deadlines for Version 3.5, he says.

Michele Rosen, a research manager at IDC, says IBM has targeted systems integration with this release.

"More and more application development is being done for the sake of integrating and extending legacy applications, and it's important that the application server includes that integration capability," Rosen says.

IBM also beefed up Web services support in Version 5.0. The product includes a Web Services Gateway for managing Web services across the Internet and a private Universal Description, Discovery and Integration repository for organizing Web services.

An integrated workflow engine lets developers compose and choreograph Web services that link multiple business processes — such as checking inventory and shipping — without having to understand all the underlying complexity, says Scott Hebner, director of WebSphere marketing.

Down the road, Version 5.0 will become the underlying platform for IBM Software Group's broad portfolio, including Tivoli, Lotus and DB2 products, Hebner says.

"[A]s we move forward with this strategy, [customers] are going to have common administration, common systems management and common development tools," he says.

Pricing starts at $8,000 for a single server configuration and $12,000 for network features such as clustering and failover. It supports Windows, Linux, AIX, Solaris and HP-UX.

Staff Writer Denise Dubie contributed to this story.

Candle bundles WebSphere mgmt.

Company offers software, services to help users implement and manage IBM's product line.

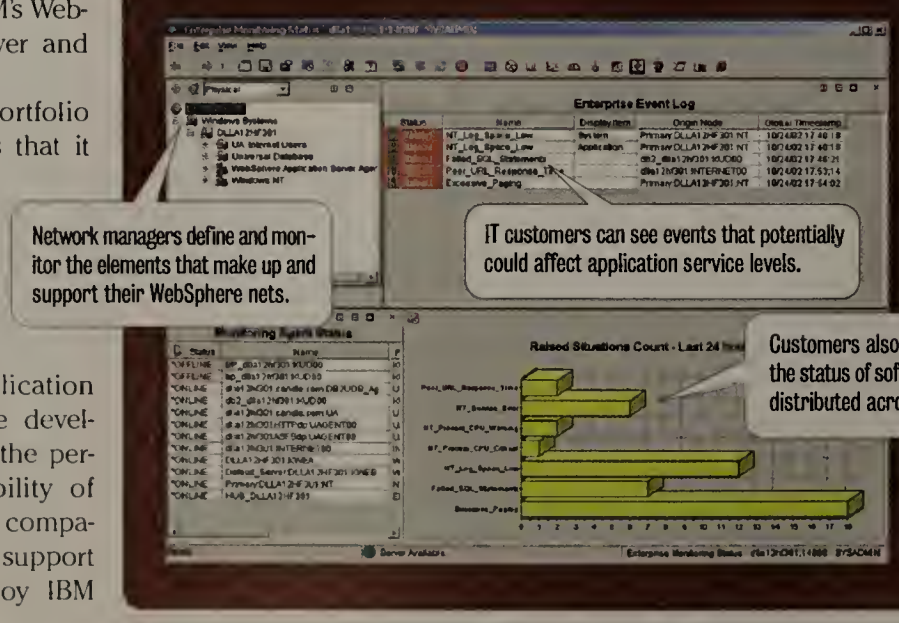
■ BY DENISE DUBIE

EL SEGUNDO, CALIF. — Candle this week will introduce software and services designed to help companies more easily deploy and manage IBM's WebSphere application server and middleware products.

Candle's PathWAI portfolio includes nine offerings that it says can help customers better deploy and implement. IBM's WebSphere family of which includes integration broker, portal, e-commerce and application server software. Candle developed tools to monitor the performance and availability of IBM's software, and the company designed services to support users looking to deploy IBM WebSphere tools.

The beaten path

Candle's new PathWAI suite of bundled sofware and services helps WebSphere users with design, deployment and management of their environments.



PathWAI Architecture for WebSphere would help users who are just starting to implement WebSphere by offering network design consulting and some software tools. PathWAI Monitor for WebSphere MQ, on the other hand, works for customers already using the WebSphere MQ middleware, which sits between front-end Web servers and back-end systems serving as a messenger between the two. The package monitors the MQ software to ensure its performance and sends data to Candle's dashboard application, a Web-based interface that shows events, status, alerts and the like, or to consoles by other management vendors.

The other products in the portfolio can help users manage everything from the testing and tuning of an application before rollout to generating historical reports of how well WebSphere performed.

Meta Group analyst Corey Ferengul says Candle's experience with IBM-specific networks — the company has been a partner with IBM for about 20 years — and its PathWAI portfolio help ease the use and administration of WebSphere tools. More importantly, he says, the PathWAI packages can let users more easily integrate front-end Web applications.

Take AXA Financial in New York. The company, which offers insurance and brokerage services via the Web to about 220,000 policy holders, uses PathWAI Dashboard for WebSphere MQ and PathWAI Monitor for WebSphere MQ to tie front-end Web applications to data in legacy systems. AXA Senior Vice President and CTO Don Buskard says AXA salespeople must access those systems constantly, and PathWAI lets them do so without his IT team having to write and rewrite software. In AXA's case, Candle software sits on the server with the WebSphere MQ middleware software and monitors its performance, sending alerts to a central management console when problems occur and giving network managers a view of the MQ systems activity.

"Candle allowed us to bolt on new technology on our front end so employees and customers can get at that back-end data in real time," Buskard says. He says Candle made the process of integrating AXA's mainframe elements with newer technology simple. And the software from Candle helps him monitor all the components from one console.

Ferengul says Candle's strength lies in managing IBM products, but the company must expand its software to cover products from vendors such as BEA Systems, Oracle, Tibco and WebMethods. And Candle must be aware of the growing competition IBM's own Tivoli management software division represents; the company has its own Tivoli Management for WebSphere software.

Pricing for the PathWAI bundles will range from $17,000 to $100,000, depending on configuration. ■

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MOVING BUSINESS FORWARD

States, RBOCs battle over regulations

■ BY MIKE MARTIN AND TIM GREENE

State regulators are banding together in a last-ditch effort to influence a looming federal ruling about whether they can keep the tools they have for promoting local phone competition.

Eighty regulators from 34 states oppose restriction of their current authority to determine how much established local phone companies can charge for leasing network facilities to competitors. "Any restriction ... will negatively impact the growth of local competition," says a letter sent last week to the Federal Communication Commission from members of the National Association of Regulatory Utilities Commissioners (NARUC).

The state commissioners want to weigh in before the FCC decides if it will alter the terms under which the regional Bell operating companies must lease phone lines — and, in particular, phone switching — to their competitors. The U.S. Court of Appeals for the District of Columbia says the FCC must rule by Jan. 2. (See related column at www.nwfusion.com, DocFinder: 3239.)

The RBOCs have long wanted to eliminate certain federal competition restrictions they say are breaking their backs. The FCC is reviewing the list of network parts that RBOCs must lease at cost to competitors, a list known as the unbundled network elements platform (UNE-P). The FCC could leave the list alone, delete items or do away with the list altogether.

While the UNE-P list is national, individual state utility boards have discretion as to how much of it to allow.

Unbundled elements let providers, such as AT&T and WorldCom, lease just the phone lines that connect to customer sites and install equipment that lets them deliver phone service over those lines. An alternative would be for competitors to lease the lines and all the other elements necessary to provide the service, and sell it at a higher price.

The UNE-P list includes phone switching, which lets competitors sell phone service without owning local switches, and RBOCs balk at that.

Verizon would like to see UNE-Ps disappear entirely, says Scott Randolph, director of federal regulations for Verizon. UNE-P elements sell at a 40% to 60% discount, double or triple the 20% discount for resellers.

RBOCs say they lose money on unbundled elements. SBC Communications has proposed an alternative that would replace UNE-P with a nationwide wholesale arrangement whereby competitors would buy an entire service and resell it to their customers. SBC uses the example of setting a $26 per month wholesale price for regular phone service that competitors then could increase.

The wholesale arrangement would stay in place for two years, after which competitors would have to support services with their own switches.

AT&T uses its local infrastructure and its own switches to provide service wherever it is economically feasible, says Reed Harrison, senior vice president of local network services for AT&T. "We use UNE-P to provide basic voice services to small business customers," he says. AT&T will use its own switches as it penetrates local markets and it becomes economically feasible to do so.

Randolph says AT&T and WorldCom, the largest buyers of UNE-Ps, are not converting to using their own switches in conjunction with leased phone lines because UNE-P prices are so low.

State regulators oppose blanket national rule that might not be the best option in each state, says Bob Nelson, chairman of NARUC's telecommunications committee. "It's far too early to pull the rug out," he says. "The right time [to drop UNE-P] may be earlier in New York than in Idaho."

He says states have more resources and are closer to the local markets than the FCC, and so are in a better position to decide the fate of elements on the UNE-P list. ■

Making demands

Regulators from 34 states want control over what network elements RBOCs must lease at cost to their competitors by:

- Keeping in place the list of UNEs that RBOCs must sell to competitive carriers.
- Retaining authority to add to the list.
- Holding exclusive power to take UNEs off the list.
- Deciding what UNEs are necessary to avoid impairing the ability of competitive local exchange carriers to compete.

Web services
continued from page 1

partner networks.

"We are aligning the architecture work of the W3C, the protocol work of OASIS and the Common Information Model developed by the DMTF," says Winston Bumpus, chair of the OASIS Management Protocol Technical Committee and president of the DMTF. "None of these groups has all the expertise to solve this problem. So all the groups working in a unified way is the right thing to do."

Bumpus says the work is in its infancy, highlighted by the fact that OASIS doesn't even have a name for its protocol. He says his committee, started in September, will meet in January and hopes to have a concrete protocol on the table by mid-2003 to go along with architecture guidelines that the W3C's Management Task Force, which also formed in September, is developing.

Management and security are two high-profile issues inhibiting the adoption of Web services technology, which promises to make it easier to integrate systems among multiple corporate networks using standard interfaces. Many network executives are waiting for those standards to be mature before considering the use of Web services outside of pilot programs.

A survey this month by the Patricia Seybold Group showed that 85% of network executives plan to have Web services deployed in the next 12 months, but they say lack of standards is the chief hurdle.

"It's important to come out of this with one answer on how you do Web services management," says Heather Krieger, Web services architect for IBM and a member of the W3C and OASIS management groups. "Different parts of the problem will be solved in different standards organizations, but we have to cooperate."

Coupled with cooperation, experts say, is the need for widespread adoption and homogeneous implementation across vendors' products, which historically has not been the case with management standards.

"The primary management protocol used today is SNMP, which was developed in 1987," says Cameron Haight, research director for Gartner. "The good news is that management isn't new technically." On the other hand, Haight says, "Web services adds a lot of moving parts to an already complex puzzle." He says management must take place vertically in what he calls the Web services layer and horizontally on the network components that support them, such as Web application servers.

Two weeks ago, the W3C's Management Task Force (MTF) presented its first proposals to the standards body's Web Services Architecture Working Group. The proposal only clarified aspects of the W3C's current Web Services Architecture as they relate to management. But the MTF's Web Services Management Architecture will attempt to define what components in a Web services architecture must be managed and what type of management information each component must provide.

"We've done Step 1 in recognizing the problem, now we will create a view of what we need to do," says Hugo Haas, leader of the W3C's Web Services Activity, a collection of three working groups. The next MTF meeting is in January.

At OASIS, the Web Services Management Protocol Technical Committee is using Web services building blocks such as XML and Web Services Description Language to devise a common way to describe network nodes and applications to be managed, and the relationship between those managed components, OASIS' Bumpus says. The committee also plans to define a common way to communicate and extract data from managed components.

The group is evaluating the Common Information Model from the DMTF, which is the foundation of the group's Web-based Enterprise Management initiative. It also is looking at the Open Management Interface model that WebMethods developed.

"The consensus seems to be we should create one common model," Bumpus says.

Experts say that will be key to building a distributed management infrastructure.

"Lots of Web services are being built on [Java 2 Platform Enterprise Edition] and the primary management protocol is [Java Management Extensions]," Gartner's Haight says. "How will that fit with OASIS?"

Haight also points out that the Java Community Process, an open group developing Java technology, is reviewing a specification request that outlines adding an information model to the Java Management Extensions. "We have to hope that these Web services standards groups can succeed, but I can already see the conflicts," he says. ■

Who's doing what?

Three groups are pooling efforts to create standards for management of Web services.

Group	Scope of work
W3C	Defining what needs to be managed and how, and managing within the context of a network architecture built for Web services.
OASIS	Using Web services staples, such as XML, SOAP, UDDI and WSDL, to support standard models for providing, accessing and sharing management data.
DMTF	Common Information Model: A data model for describing managed elements across corporations, including systems, networks and applications.

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Comdex
continued from page 1

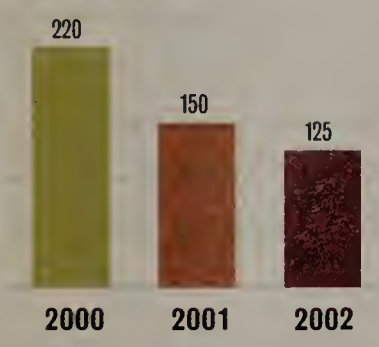
with tongue in cheek — that the IT recovery will begin specifically in June 21, 2003. Halla added, "We're already in an uptick." He predicted a flurry of new electronics devices for consumers and businesses will be key drivers of that recovery.

Microsoft Chairman Bill Gates

Comdex wanes

As the technology industry struggles, so goes Comdex:

Comdex attendees (in thousands)



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touted this year, as he did last year, the new Tablet PCs, with a version of Windows XP that saves what users write on the tablet screen with a special stylus. But he admitted later to reporters that the operating system might not win legions of adherents because the handwriting recognition software isn't perfect.

Hewlett-Packard CEO Carly Fiorina told attendees her company launched a new advertising campaign focusing on the breadth of HP's activities. She promised her keynote audience that HP would be a market leader across much of the IT industry.

That rhetoric disappointed some observers: "I was hoping to hear more about the future, like specific products or strategies," said Varun Joshi, a consultant from Los Angeles.

Two days later, it became clear why Fiorina had been light on details. HP posted revenue of $18 billion for the fourth quarter, which ended Oct. 31. This compares to the combined revenue of $18.2 billion from HP and Compaq in the same quarter last year. The company announced 1,100 more layoffs on top of the most recently announced 16,800 layoffs. What saved the company's bacon: a sterling performance by its printing and imaging division.

Sun Chairman Scott McNealy also had his moment in the Comdex klieg lights. He was light on what Sun would do to restore growth, but did have specific advice for his customers. They should reduce the number of servers they use, consolidating on one, high-end platform such as Sun's Sun Fire 15K line. And their software development efforts should abandon the operating system and instead target high-level, platform-independent environments such as Java, XML and the Sun Open Network Environment.

Wireless and mobile computing was one area that saw many Comdex product announcements.

As expected, Broadcom and Intersil unveiled a new generation of chips that will support the pending IEEE 802.11g wireless LAN standard, of up to 54M bit/sec in the same 2.4-GHz band as today's 802.11b products. Wireless LAN product vendors Netgear and Linksys unveiled plans to introduce 802.11g products by year-end. These products will not be officially 802.11g-compliant, nor will the first chipsets, until final IEEE ratification.

The Wi-Fi Alliance, an industry trade group promoting wireless LAN interoperability, announced plans to introduce a testing program for 802.11g products next year, after the IEEE ratification. The group will introduce early in 2003 a testing program for wireless LAN products that combine 802.11b and 802.11a standards on a single adapter card or access point. The 802.11a standard supports up to 54M bit/sec in the 5-GHz band.

On the handheld front, several business users at the show said they've gravitated to Pocket PC devices based on Microsoft technology instead of the Palm OS devices from arch rival Palm.

"The iPaq just works out better in an IT setting than the Palm," said Dan Pendergrass, Internet applications manager for the County of El Paso, Texas. Ten out of 30 county employees use iPaq handhelds, which are linked to the county's computer system, he said.

The Pocket PC also edged out Palm OS devices for the Lenape Regional High School District in Burlington County, N.J. Application support for the Pocket PC was one main driver for the decision, said Michael Haas, a LAN

See Comdex, page 18

Linux launch at Comdex

While Microsoft traditionally dominates Comdex, several companies used last week's show to announce the first production version of a unified Linux distribution.

UnitedLinux 1.0 is the product of a combined development effort from Linux vendors SuSE, TurboLinux, The SCO Group (formerly Caldera International) and Connectiva.

The unified Linux distribution aims to give users a standard enterprise version of Linux, which could help simplify purchasing and rollout decisions, UnitedLinux backers say. A unified Linux offering also could make the operating system more appealing to independent software vendors by letting developers write one set of code that is compatible with multiple Linux versions.

Each UnitedLinux company announced its own branded Linux server products based on UnitedLinux 1.0.

Behind Linux

Companies that have pledged support to UnitedLinux include:

- AMD
- Computer Associates
- Fujitsu
- IBM
- NEC
- Network Appliance
- Toshiba
- Ximian

Version 1.0 is based on the Linux Standards Base, a similar Linux standardization effort, and includes enterprise server features such as enhanced symmetric multiprocessing, hot-pluggable PCI support and "asynchronous I/O" support for handling large-scale server transactions. Both 32-bit and 64-bit Intel platforms are also supported on UnitedLinux 1.0, as well as 32- and 64-bit AMD and IBM PowerPC processors.

Some observers say UnitedLinux is an attempt by a handful of Linux vendors to gang up on market leader Red Hat, which is dominant in enterprise Linux server deployments. (The UnitedLinux companies invited Red Hat to join them in May, but the company declined.) UnitedLinux will go up against Sun Linux, which was introduced in August as an alternative to Solaris for low-end Intel boxes.

— Phil Hochmuth

Coping with information overload

The barrage of new products pumped out at events such as Comdex can make it difficult to separate useful IT technologies from mere gadgetry and fluff.

The process of evaluating and making decisions on new products is a balancing act for Gregor Bailar, vice president and CIO at Capital One Financial in Falls Church, Va. He says that keeping up with advances in the "nuts-and-bolts" improvements in enterprise hardware and software products is important, but that effort must be made along with analysis of his company's business needs, strategies and goals. This is done on the one hand with the company's CTO, who researches new technology. On the other hand are the half-dozen other IT executives in charge of Capital One's subsidiary companies who keep Bailar in tune to what the technology business needs are at the day-to-day level, he says.

"If I only listened to my CTO, I'd only get the future-looking stuff and I'd be out of touch with what's going on with the company's needs," he says. "If I only listened to [the subsidiary CIOs], we would be behind the curve in terms of adopting technologies that could improve our business."

Among the gadgetry on display at the show, Bailar says Wi-Fi products as a technology seem to be a good balance between the cutting edge and practical.

Mark Hedley, CTO at Wyndham, says he needs to see the business benefit of new technology.

Delegation also is the strategy for Mark Hedley, CTO and vice president of technology at hotel chain Wyndham International in Dallas.

"We have between five and 25 cold calls and information packets sent to us every day," Hedley says, from vendors asking him to look at new products. This forces Hedley and his staff to be tough on any new network or computing products pitched their way.

Of the 67 employees he manages, Hedley says, "most are busy maintaining and supporting the company's current business architecture. Then I have two or three people who are looking at new things on the side, because of their love of technology."

To make it through these filters, Hedley says, the technology "has to be something that has a business application. There needs to be a formal financial model for how it will benefit the business or reduce costs before a technology goes anywhere." Some new technologies at Comdex that Hedley says might pass his sniff test include high-speed Wi-Fi infrastructure gear.

— Phil Hochmuth

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Comdex

continued from page 16

technician for the district. "The application we need is only available for the iPaq," he said. "Either it is easier to develop on or there are just more developers because it's Windows."

The deluge of new mobile products is good news and bad news for network decision-makers. Gary Dixon, a systems administrator for American Electric Power in Columbus, Ohio, looked for whatever new wireless clients were being unveiled. Dixon said he wanted to head back with at least one idea for standardizing on one or two devices, instead of the array, with different operating systems, that he now has to support.

Testing those options is exactly what Tim Stanley is doing. Stanley, a Comdex speaker, is the CIO for Harrah's Entertainment, which owns a number of casino properties in Las Vegas and elsewhere. Harrah's is running wireless pilot networks to speed hotel check-ins, among other things. "We're looking at [handheld wireless technology] as a way to give the customer the 'white-glove' treatment," he said.

But he still has concerns about wireless LAN reliability and security. "The fear is having technology get in the way of the customer experience and botch that up when it doesn't have to," Stanley said.

Microsoft's Bill Gates, Sun's Scott McNealy and HP's Carly Fiorina addressed Comdex attendees at separate keynote speeches last week.

The reality of such concerns was vividly highlighted in the Comdex pressroom, where a few wireless LAN kinks needed to be straightened out. (See Reporter's Notebook, below.)

Kinks also are still being worked out in Web services. At his opening keynote address, Gates once again trumpeted Microsoft .Net, a collection of software and Internet protocols such as XML, to create Web applications that easily can share data. He demonstrated a Web service that the nationwide copying and printing chain Kinko's is creating: from a Microsoft Office application, users can print to a Kinko's store over an Internet connection.

But the story was somewhat marred by several facts: Microsoft has something like a .Net SWAT Team working with Kinko's on the project; and despite this help, the Web service won't be ready until mid-2003. On the same day as Gates' speech, the company made its only Web services product announcement: that the shipment date of Windows .Net Server 2003, which is the operating system for .Net, had slipped from December 2002 to April 2003 (see www.nwfusion.com, DocFinder: 3244).

For many attendees, such as Peter Watkins, CTO of publisher McGraw-Hill in Columbus, Ohio, Web services remain vague in the extreme. "There's been a lack of clarity from Microsoft on how all the pieces [of .Net] will interface with each other and come together," he says. "We're looking at the application of .Net technology to our business, but we're taking it one step at a time." The caution is all the more striking because Watkins says about half of the 389 applications that the McGraw-Hill companies use have been recast as browser-accessible Web applications.

Reporter's Notebook The lighter side of Comdex, compiled by *Network World* staff

More power to them

Handheld gadgets were everywhere at the show, from cell phones to PDAs to digital cameras. But the one problem with all these devices is battery life. Without a power cord, they cannot run forever — even if you're an executive for one of the companies offering such a device. A Sprint executive was spied in her company's booth talking on her cell phone as it was sitting in the desktop charger, holding both items up to her ear. If she can't get a phone that purports to have a weeklong battery life, none of us can.

Very ungroovy, baby

The imagination well might have run dry as far as companies coming up with unique ways to draw crowds. Walking around the show floor, we saw three different "Austin Powers" spoofs. Two were across from each other. At least Microsoft was a little bit more current in its creativity department, as its "show" included a spoof of "CSI" — the company called its version "Computer Scene Investigation." And in another sign that the budgets are leaner for trade shows, we failed to see a single magic act on the show floor.

IDG NEWS

Former Guns N' Roses guitarist Slash hit the Comdex stage to tout Advanced Micro Devices' 64-bit processor.

A star-studded event

Not just the IT industry luminaries came out for Fall Comdex 2002.

Oscar-winning actor Kevin Spacey was wandering around the pressroom. Spacey, at Comdex to announce his new Web site, Trigger Street.com, seemed to be eyeing the free food buffet set up for the press, but was stymied by pesky autograph seekers. Also, appearing on stage with Hector de Ruiz, president and CEO of Advanced Micro Devices, was guitarist Slash, formerly of Guns N' Roses. Introduced as "The CEO of Rock," after Ruiz's keynote address, Slash played a version of Bob Dylan's "Knockin' on Heaven's Door" (which Guns N' Roses covered in the early 1990s). But instead of Axl Rose, Slash was accompanied by a choir who sang the altered lyrics "AMD's running on 64" — as in, AMD's 64-bit processor.

Wireless and connectionless

Apparently all the journalists covering this show decided to activate their wireless LAN cards in their notebooks. The wireless LAN in the pressroom was working, but the Dynamic Host Configuration Protocol (DHCP) server that was supposed to assign IP addresses apparently gave out all its addresses.

The helpful guy at the wireless LAN help desk said they were only given 400 IP addresses, and by 11 a.m. more than 600 journalists had received an IP address from the DHCP server. New requests were being denied until previous users released their address, so while reporters could connect to the access point easily, they couldn't get to the Internet at large. Trying to connect to the wireless LAN became a crapshoot, coincidentally in Vegas. It was unclear whether this problem also happened at other wireless LAN locations throughout the show.

Getting the message

Cisco Unity™ harnesses the power of IP to deliver on the promise of unified voice, e-mail and fax messaging

You're attending a trade show in Las Vegas, stuck in yet another interminable line, waiting for a taxi. While those around you shuffle their feet, read a paper or engage in idle chatter, you use your cell phone to call the Cisco Unity unified messaging system at the home office. In the 30 minutes it takes to get a cab and get back to your hotel, you've reviewed about 40 incoming e-mail and voice messages, deleting some, forwarding a few to colleagues with your own voice comments and saving others to deal with later. You've even redirected an incoming fax to your hotel's fax machine.

Such is the power of Cisco Systems Unified Communications, systems that put valuable productivity tools right at your fingertips. For years the promise of unified messaging—a system that delivers every message to a single inbox, regardless of media type—was just that, a promise. But the advent of converged solutions such as the Cisco IP Communications system has made the unification of voice, e-mail and fax communications a reality. Enterprises are using such tools to dramatically boost end user productivity by making it simple for employees to access and manage incoming messages using the most convenient device.

Administrators, too, benefit from a system that employs a single message store and directory, eliminating the need to maintain separate databases and directories for voice and e-mail messages. As the premier unified communications solution for enterprises, Cisco Unity—an integral component of the Cisco IP Communications system—also works with a number of leading voice mail systems, providing advanced messaging functionality and enabling companies to deploy full unified messaging at their own pace.

A productivity boost

Users who get a taste of Cisco Unity, however, will likely want to replace their old, separate voice, e-mail and fax systems as soon as possible.

With Cisco Unity, users manage all their incoming voice, e-mail and—when integrated with a supported fax server—fax messages via a single user interface. When operating from a desktop machine, that interface is the Microsoft Outlook inbox. Earlier this month, Cisco also announced Cisco Unity support for Lotus Notes/Domino. With either system, users can access e-mail, manage incoming faxes and retrieve voice messages using any PC or phone.

Users have far more control over voice mail with Cisco Unity, including the ability to archive voice messages in folders, just as they do their e-mail. Users can easily control message speed and volume, as well as pause and reverse during playback. Voice messages can be forwarded via e-mail—even to users who don't subscribe to Cisco Unity—as a .wav file attachment.

Icons provide a quick and easy way to scan through messages, which users can then open with a single mouse-click. Messages from internal users are identified as such and caller ID data is employed when available for others, so users can immediately identify the most important messages. "It's much quicker and more efficient than the phone interface," says Bob Cordes, Cisco Unity product manager.

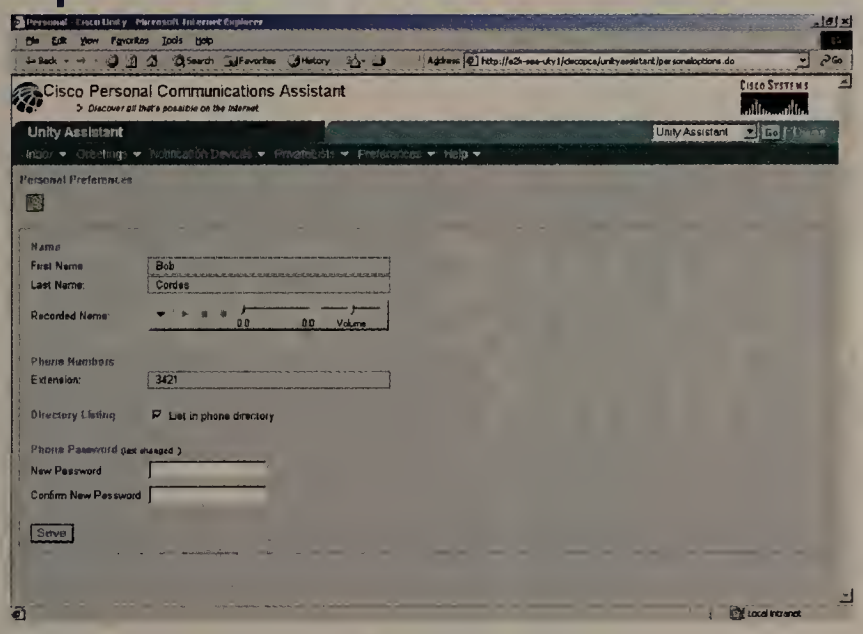
Effective assistants

Cisco Unity also employs text-to-speech functionality that enables users to check their e-mail from any phone, helping busy professionals maximize their time. The system "reads" the subject line, the text portion of a message and—for messages from internal users—says the sender's name, helping users quickly manage incoming e-mail.

Cisco Unity includes administration tools that enable end users to control many of their own call-handling and other preferences, easing the burden on IT staff. Unity Assistant is a browser-based personal administrator that enables users to set their own passwords, change outgoing greetings, screen calls, customize message notification preferences—such as to pagers and cell phones—and myriad other functions.

Like Cisco Unity, Cisco Personal Assistant offers feature-rich unified communications that enable users to set their own call routing rules, whether by time of day or by caller name. Rules can also be tied to Microsoft Exchange calendars, making it possible to route all calls to voice mail whenever you're in a meeting, for example. Users can also forward calls to predefined off-site phone numbers. The system supports speech recognition, enabling users to simply tell Cisco Personal Assistant to dial a given name stored in their personal address book or the corporate directory. Such features are even available from remote locations so that users can dial in via cell phone, for example, and ask Cisco Personal Assistant to dial a number—no more fumbling through cell phone directories while driving. Users can also check their calendars and accept or decline appointments via the LCD screen and softkey interface of any Cisco IP Phone.

A personal administrator



The Web-based Unity Assistant makes it easy to customize call screening, message notification and personal options.

IT-friendly

Cisco Unity likewise enhances IT staff productivity. The system runs on Windows 2000 servers and uses the Exchange 5.5 directory, Active Directory or the Lotus Notes address book to store user names for both voice mail and e-mail. That makes for one less directory to manage, while providing users with a true global directory for both voice and e-mail messages. Both services use the same message store, again reducing administrative chores. Cisco Unity's Class of Service functionality also enables system administrators to delegate routine tasks—like moves, adds and changes—to junior resources.

Cisco Unity offers several tools that enable interoperability with voice mail and call management systems from a number of vendors, including Octel/Avaya, Siemens and Nortel Networks. They include a module that supports the AMIS-A protocol, for interoperability between multivendor voice messaging systems, and the Cisco Unity Bridge, which enables advanced message exchange with Avaya and Octel voice messaging systems. In December, Cisco will also roll out support for the Voice Profile for Internet Mail (VPIM) standard, enabling Cisco Unity users to exchange voice, e-mail and fax messages with users of other VPIM-compliant systems.

"Cisco Unity lets customers migrate at their own pace," Cordes says. "We can help you accelerate your move to full IP Communications to maximize ROI, but we can also work with an investment you need to protect."

This is the third of a six-part advertising series on Cisco IP Communications solutions. Look for a profile of a unified messaging customer in the Dec. 16 issue.

Cisco touts variety of security routers for VPNs

■ BY TIM GREENE

SAN JOSE — Cisco is wheeling out new security routers for small offices this week that make it possible to network small and home offices into corporate VPNs.

Two low-end devices called the SOHO 91 and SOHO 97 routers are meant for telecommuter offices with dedicated Internet connections and support up to 300K bit/sec of Triple-DES encrypted VPN traffic. The devices include firewalls and four-port 10/100M bit/sec Ethernet switches. The SOHO 91 has an Ethernet WAN port, while the SOHO 97 has a built-in asymmetric DSL (ADSL) modem. Prices start at $350 and $450, respectively.

These fixed-configuration boxes are smaller than Cisco's VPN 3002 hard client, which comes with an eight-port switch. They compete with SonicWall's TELE3 gear, which costs about $500, and WatchGuard's SOHO gear, which costs about $600.

For sites needing higher throughput, the Cisco 831 and 837 routers can include firewalls, VPNs and hardware to accelerate encryption and support voice, video and data. They are capable of 2M bit/sec Triple-DES encryption. Both boxes include four-port 10/100 Ethernet switches. The 831 has an Ethernet port to connect to WAN devices such as a DSL modem or DSU/CSU. The 837 has an built-in ADSL modem to directly connect to a DSL.

The 831 comes with hardware acceleration for encryption. An option to add other features — such as the ability to deliver quality of service for voice and video, intrusion detection and an Easy VPN feature that makes it simpler to set policies on individual devices — costs extra. The same software package is available for the 837, and it also turns on the hardware acceleration for encryption, which is turned off in the basic model. This package costs an extra $150 more than the base price of $800. The 831 costs $650. All are scheduled to be available this week.

These devices are part of a Cisco security announcement that includes hardware to speed VPN traffic on routers, a Secure Sockets Layer (SSL) acceleration appliance and upgrades to Cisco IOS software.

Two new accelerator cards can be added to Cisco 2691, 3660 and 3700 routers to improve VPN throughput and lighten the load on the routers' CPUs. With throughput of 80M bit/sec, the EP II card handles Triple-DES and Advanced Encryption Standard encryption, and compression. The HP II has throughput of 90M bit/sec. The EP II costs $2,500, and the HP II costs $3,500. Both will be available next month with the release of IOS 12.2(14T).

The SSL appliance, called Secure Content Accelerator II, performs 800 SSL transactions per second and works with any switch, router or Layer 4 to 7 device. It costs $18,000 and will available this week.

IOS upgrades include failover between routers that support VPNs, so if one router dies or the connection breaks, a back-up router takes over without dropping sessions. The upgrade also includes dynamic multipoint meshing of VPNs, in which a hub router in a hub-and-spoke network sets up VPN tunnels on the fly as they are requested. That lets businesses set up VPN links just between the spoke sites and the hub, leaving the hub router to connect spokes to spokes as the need arises. This reduces the amount of VPN tunnel provisioning administrators have to perform. ■

Infrastructure

■ TCP/IP, LAN/WAN SWITCHES
■ ROUTERS ■ HUBS
■ ACCESS DEVICES ■ CLIENTS
■ SERVERS ■ OPERATING SYSTEMS
■ VPNS ■ NETWORKED STORAGE

Short Takes

■ **IBM** next month will debut a Unix server that will let users cram more than 100 of its most powerful processors into one system. IBM will release the new **p655** server and make the system a central piece in the company's hardware strategy targeted at the high-performance computing market. Customers can link four-processor and eight-processor models of the p655 to form a 128-processor system that fits in one rack, the company says. Armed with IBM's Power4 processor, the p655 will challenge similar systems built with chips from Hewlett-Packard, Intel and Sun. The p655 uses much of the same technology found in IBM's high-end p690 server, including 1.1-GHz and 1.3-GHz Power4 chips and the latest version of the AIX operating system. However, unlike with the much larger p690, users can connect numerous p655s via IBM's SP Switch interconnect to form a cluster or group of servers that act as one system. IBM is expected to release another version of the p655 next year that uses new Power4+ chips that run at 1.7 GHz. A four-processor p655 with 1.3-GHz chips and 4G bytes of memory will start at $73,485. www.ibm.com

■ **Hitachi** last week launched a range of desktop computers that include **built-in IEEE 802.11a wireless LAN modems.** The 802.11a standard supports data transmission at rates up to 54M bit/sec and makes use of spectrum in the 5-GHz band, an increase in speed and frequency from the more common 802.11b standard that supports up to 11M bit/sec transmission at 2.4 GHz. Among a range of 14 desktop and notebook machines, three of the desktop models come with built-in 802.11a support. They differ in the processor, which is either a 2.4-GHz or 2-GHz Pentium 4 or a 1.7-GHz Celeron, and each has 128M bytes of memory and a 40G-byte hard disk drive. Prices range from $2,025 to $1,555. The machines also include support for USB 2.0, which supports data transmission at 480M bit/sec per second. www.hitachi.com

Diligent improves mainframe backup

Virtual tape technology promises faster, more economical data storage.

■ BY DENI CONNOR

FRAMINGHAM, MASS. — A technology that backs up mainframe data to disk rather than tape to save money and floor space while enhancing data recoverability got a boost recently from start-up Diligent Technologies.

Diligent is taking a run at virtual tape technology — long characterized by products from IBM and StorageTek — that backs up mainframe data faster and more economically to large tape libraries rather than individual tape drives.

The company, which bought technology from EMC in September called Copy-Cross, is expected to introduce software this week, called Diligent Tape Virtualization — Mainframe Systems, that backs up data from IBM zSeries servers running zOS to an EMC Symmetrix, Hitachi Lightning or IBM Enterprise Storage Server.

Traditionally, mainframe virtual tape systems emulate the processing of tape in zOS environments and save the data to disk or massive tape libraries, as if it were data sets for multiple IBM 3840, MagStar or Storage 9840 tape drives. By using disks or tape libraries, it reduces the floor space consumed by tape, improves the availability of data and lets multiple servers share the data.

"Users need to have increased flexibility between tape and disk," says Jamie Gruener, an analyst with The Yankee Group. "Virtual tape software lets you take what was targeted for tape and put it on disk. Diligent is taking technology that is focused on the mainframe environment and, long term, extending it to open systems."

Virtual tape technology backs up mainframe data faster and more economically than individual tape drives.

CEO and founder Doron Kempel says Diligent will support arrays attached to Fibre Channel storage-area networks (SAN) in the first half of next year and technology that lets data residing on one storage array be replicated to another remote array for disaster-recovery purposes.

One user, who is consolidating his server and storage operations, has experience with both traditional virtual tape technology and with the new open systems approach.

"Data comes in from the servers, goes onto the IBM Virtual Tape Server and is then pumped later to the individual tape systems," says James Haney, vice president of architecture for appliances maker Whirlpool in Benton Harbor, Mich.

Using IBM's tape server has saved Haney space. "We've taken 4,000 tapes off our floor doing it this way. We have so few stand-alone tape racks anymore," he says.

Diligent is not the first vendor to introduce virtual tape technology. Initially,

See Diligent, page 22

VPN mgmt. help on tap from SmartPipes

Company's VPN management software no longer just for carriers.

■ BY TIM GREENE

REDWOOD CITY, CALIF.— SmartPipes is now offering its services directly to businesses, providing them an easier way to manage Cisco-based VPNs.

With the service, customers register their VPN sites to directories within SmartPipes' network and can access SmartPipes IP PolicyPro software to provision changes to their VPN via secure Web connections. The software uses graphical user interfaces as opposed to more complicated command-line interfaces (CLI), and it also automates some management functions.

Until now, SmartPipes only sold to service providers that in turn sold SmartPipes-based VPN management services to business customers.

But with businesses becoming leery about whether service providers will survive, they are looking for ways to control their own networks directly, says Michael Suby, a senior research analyst with Stratecast.

Icon Clinical Research, a pharmaceutical research firm with U.S. headquarters in North Wales, Pa., is using SmartPipes service to manage its new VPN that replaces a frame relay network. The company buys simple Internet access for each of 10 sites on its VPN, then manages the gear via SmartPipes, says Peter Ghosh, Icon's IT operations network manager.

VPN popularity

71.6% of businesses with more than 25 employees use IP VPNs for remote access.

SOURCE IDC

The company pays less for the Internet connections than it paid for frame relay, and it can fully mesh the VPN without paying per-virtual-circuit fees that come with frame relay, he says. It pays SmartPipes $60 per month, per site, he says.

SmartPipes software automatically updates the configuration of all the routers in the network as needed, a complex and time-consuming chore without the platform, Ghosh says. "We're doing a fully meshed network so every time we have to add a site, we need to update each device," he says. IP PolicyPro eliminates the need for highly trained technicians to write VPN polices using CLI and distributing them machine by machine, the company says.

Icon considered buying Cisco's VMS 2.0 VPN management platform, but it was too expensive and represented yet another network device to take care of, Ghosh says.

The drawback is that the software only supports Cisco gear, Suby says, although SmartPipes says it will support anot[illegible]r

See SmartPipes, page 22

TOLLY ON TECHNOLOGY

Kevin Tolly

Application service provider or self-service?

By definition, application service providers offer a service. Salesforce.com offers CRM, Corio serves enterprise application services, and GoToMyPC offers remote desktop access. But what if the service is really just "convenience"? Might self-service be the way to go? Let me explain.

I need what ExpertCity offers with its GoToMyPC service. Frequently enough, I need to access several PCs that are miles from where I am. The free trial proved that the service could deliver. (While response time could have been better, I couldn't pinpoint that the application service provider was the bottleneck.) I was sold — until I saw that, for enabling the service on just two target PCs (my minimum), I'd have to pay $30 per month. (They offer a 25% discount for annual contracts.)

I had the same reaction to this as I do to Columbia House CD club mailings — go away. I could see myself signing up for an annual contract, using the service infrequently, forgetting about it and paying forever. Then my thoughts turned to self-service. Do I really need what ExpertCity can offer, or can I just cobble it together myself?

It was easier than I had imagined. And, while it doesn't have all the functions ExpertCity offers, it also doesn't cost me a dime. And, setting up the whole thing took less than an hour.

Before I started, I knew the solution to the remote desktop problem. What was needed was a piece of software like PCAnywhere with a "server" component that runs on the target PC, and a "viewer" component that runs on the PC I actively use. Oh, and, of course, it had to be free.

At The Tolly Group, our free remote-control software of choice is called VNC, short for Virtual Network Computing. This software was written by programmers at AT&T Laboratories Cambridge (U.K.), which has been folded into Cambridge University's engineering department. There are versions for Windows, Linux, Solaris, Macintosh and even Windows CE. You can read all about it (and get the download) at www.uk.research.att.com/vnc.

After a quick install, which includes a mandatory assignment of a server access password, you are up and running. It doesn't offer encrypted datastreams or file transfer but it has all the functions I need.

For these requiring the aforementioned features and more, there is Famatech's Remote Administration (Radmin) program (www.famatech.com). The $35 you spend to buy it is less than the cost of two months of GoToMyPC service.

The beauty of the GoToMyPC architecture was that I didn't have to worry about knowing the IP addresses of the target machines. Being on DSL connections, they changed frequently — sometimes daily. Because the GoToMyPC client is always reaching "outbound," knowing the address is not an issue.

A few minutes on Google solved this problem. I came across a company that offered free domain name services with a client component that periodically checks the client's IP address and automatically updated the DNS.

The service, provided by Vitalwerks is called No IP Free and is hosted at a site called www.no-ip.com. They have fee-based value add services for those that need to run their business Web sites on DSL or cable modem connections, but the free service provides the up-to-date domain name mapping I needed. Setup, again, was a breeze.

While this column won't put GoToMyPC out of business, I hope it will make you think a little harder about the meaning of value.

Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Manasquan, N.J. He can be reached at ktolly@tolly.com.

NEC bulks up high-end servers

■ BY ASHLEE VANCE

NEC Solutions announced two servers last week aimed at call centers or financial companies that can't afford to have a server crash.

NEC is developing a large server based on Intel's Itanium 2 processor and a fault tolerant server that runs the Linux operating system. The company — a division of Japan's NEC that serves North America — showed a demonstration of its 32-processor Itanium 2 server, dubbed the Express5800/1320Xc at the Supercomputing conference last week in Baltimore. NEC has started shipping its Express5800/ft system that runs the Linux operating system and has a number of redundant components to guard against failures, the company says.

By backing Intel's new Itanium 2 chip, NEC now competes with Reduced Instruction Set Computing-based servers from Hewlett-Packard, IBM and Sun. The Express5800/ft system also competes against servers that run on Intel's lower-end Pentium and Xeon chips.

NEC will deliver the Express5800/1320Xc in December along with a 16-processor and eight-processor Itanium 2 server. Users can partition the systems to run multiple copies of both Microsoft .Net Server 2003 Datacenter Edition and Linux.

The Express5800/ft has started shipping with Pentium III chips and NEC's FT Linux operating system, starting at $27,200.

Vance is a correspondent with the IDG News Service's San Francisco bureau.

SmartPipes

continued from page 21

VPN vendor's gear next year. The company would not say which vendor.

Also next year, SmartPipes plans to license its software directly to businesses. So rather than register to directories in SmartPipes network, customers would set up their own management infrastructure based on their own directories and on software licensed from SmartPipes.

Previously, the only way to for businesses to use SmartPipes' software was via services sold by WorldCom, XO Communications and another provider that the company won't name. Customers would buy a managed VPN service from one of these providers, and they would give them the ability to tap SmartPipes' network.

The software automatically distributes policies to defined groups of VPN gateways.

The company plans to sell the software via value-added resellers who deal directly with businesses but also by selling directly to businesses using SmartPipes' own salesforce.

This software is unsuitable for small- and midsize-business networks because they don't have the numbers of devices to control where the trade-off between the ease of configuration and the price of the software would be a good trade-off, SmartPipes says.

Pricing has not been set, but will vary depending on the number of devices being managed, whether the software is licensed or accessed as a service and whether the customer buys a maintenance agreement.

SmartPipes: www.smartpipes.com

Diligent

continued from page 21

vendors such as IBM, Computer Associates and StorageTek focused on replacing IBM 3840 tape drives with large tape libraries. As drives became more inexpensive and as the time it took to back up the network expanded, vendors started to look for other methods of backing up data that would give them faster availability and reliably at a lower cost. EMC's CopyCross software, proved to be an excellent alternative to mainframe tape libraries because, while looking like tape to the host, it wrote data to the Symmetrix as if it was tape.

As Fibre Channel SANs were installed and as mainframes were tied into them, the need to back up to a common source grew. Several companies, such as Neartek and Bustech, introduced virtual tape technology that could back up mainframe and open systems data to shared disks. Users adopted it, too.

At Whirlpool, Haney has consolidated storage onto six IBM Enterprise Storage Servers, which he shares among an IBM mainframe, midrange and Intel-based servers. Soon, he will start consolidating his virtual tape operations to the disks of the IBM Enterprise Storage Server, where backup will take less time and data will be available more quickly.

Diligent's software is priced by mainframe processor. A typical system would cost $50,000 to $100,000 per processor. The product is available now.

Diligent: www.diligent.com

Storage soup

Vendors have several implementations for creating virtual tape systems, which back up mainframe data to disk, rather than slower, more cumbersome tape.

Vendor	Product name	Function	Connectivity	Connection type
Bustech	Mainframe Tape Appliance	IBM zSeries, zOS to open system disks	Any NAS, SAN or direct-attached storage	ESCON
Diligent Technologies	Diligent Tape Virtualization–Mainframe Systems	IBM zSeries, zOS to attached mainframe disks	HP, EMC, Hitachi and IBM	ESCON, FICON
Neartek	Virtual Storage Engine2	Mainframe, midrange to open system disks	HP, EMC, Hitachi and IBM StorageTek	ESCON, FICON, SCSI

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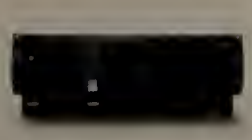

Winning with Linux® and Intel.® Online diversified financial services company E*TRADE Group, Inc., has just installed 90 IBM @server xSeries™ servers running Linux to support their E*TRADE Financial Web site. Why? Ease of use and Linux driven affordability and scalability. Select xSeries models feature the Intel Xeon™ processor to give you superior performance and cost-effectiveness. To receive a complimentary IDC white paper on how to reduce TCO with Linux, head over to **ibm.com**/eserver/etrade

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■ PRODUCTS, SERVICES AND STRATEGIES FOR TYING TELEWORKERS TO THE ENTERPRISE

Healthcare warms to remote access

Some hospitals are sidestepping traditional IPSec VPNs for newer SSL-based products.

■ BY TONI KISTNER

The scenes are stereotypical. The phone rings in the dead of night, rousing the doctor from his sleep. He throws on some rumpled clothes, kisses his wife and promises to be back soon. Or, a doctor is enjoying her 10-year-old daughter's softball game when the beeper goes off. Game over.

The notion that healthcare professionals tend the sick and injured at all hours of the day and night is a comfort, even romantic — as long as you're not the doctor. While medical workers are inherently mobile, much of the old way they work — relying on phones, pagers and paper files — ensures they waste a great deal of time in transit between hospital and office, or mucking through paper charts, with little or no time left for a life.

While patient privacy concerns have made the healthcare industry slower than others to deploy remote-access products, new technologies are forcing it to play catch up. Spurred by doctor requests and induced to reduce costs and increase efficiencies, network executives are finding VPNs based on Secure Sockets Layer (SSL) technology suits their remote access needs in many cases better than IP Security (IPSec) VPN offerings.

SSL-based products and services from Aventail, Neoteris, NetSilica and others let users access data from any browser-based device, so long as it can authenticate to the central server. Network executives can configure the VPN to provide remote users access to a clinical records database, protecting the rest of the network from breach. Because SSL firewall ports typically are left open, there's little need to reconfigure the firewall, easing configuration and management.

Regardless of technology, network executives are finding fashioning doctors into teleworkers creates challenges. A rare early adopter, Doug Torre says his first attempt to roll out IPSec VPN to a group of radiologists at Catholic Heath System in Boston last year was a "miserable experience."

To maintain control over the remote systems, Torre, the director of networking and technical services, provided the doctors with ready-made PCs loaded with an IPSec VPN client. However, the complexity of the system had users frustrated. "But we still had to send integrators to their homes. These are not low-grade users, but they don't have a lot of patience. Their time is precious and very valuable," he says.

Bruce Elkington, CIO of Overlake Hospital in Seattle, knew a VPN could improve patient care and business processing, but quickly came up against policy questions. Before settling on Aventail, he considered traditional VPNs. "But I pulled the plug on that right away. As soon as we start putting client software on doctors' remote systems, we become responsible for supporting them," he says.

Rick Jerothe, director of enterprise infrastructure at North Shore Long Island Jewish Health System in New York, faced similar issues. "Do we give doctors a machine or let them use their own, and how does that affect patient confidentiality?" he asks.

Using Aventail.net, the company's SSL-based VPN service, solves the problem. Jerothe manages only the internal PCs, and doctors are free to access network applications using any device.

With the right technology, Jerothe and his team can concentrate on helping doctors improve patient care while adhering to privacy standards. They're using Aventail.net as the basis for its new Web-based enterprise application that lets doctors access patient information culled from a variety of databases.

At Overlake, Dr. James Leggett, a cardiologist, often sees patients after they've been to the emergency room the day before. "Before Aventail, invariably, I'd end up seeing the patient before her paper chart made its way down to my office. That's very frustrating. Now I have instant access to all the emergency room data," Leggett says.

North Shore's security team is building systems that comply with the Health Insurance Portability and Accountability Act (HIPAA). Enacted in 1996, HIPAA establishes national standards meant to ensure privacy in electronic healthcare transactions. While comfortable with the security of Aventail's managed services, North Shore has chosen to keep in-house the strong authentication piece of the system, which is not specific to remote access.

At Catholic Health System, Torre rolled out two-factor authentication for the IPSec and Neoteris Instant Virtual Extranet users, and says it was a "no-brainer" to put RSA security on top. ■

Rx: Remote access

Here is a snapshot of three healthcare facilities' remote access and wireless rollouts:

	Remote access	Applications	Wireless
Catholic Health System: Network of five hospitals in the Boston area.	Rolled out traditional dial-up RAS and some Cisco VPN to IT staff and a few doctors. Tested Neoteris IVE with 20 doctors; plans to roll out IVE to 500.	Radiologists remotely access large digital images of X-rays from home over cable modem. Doctors access clinical data from remote and home offices.	None, still too concerned about security. Considering a test pilot.
Northshore-LIJ: Network of 18 hospitals on Long Island, New York	Cisco 3030 VPN concentrator used by 150 IT staff, Aventail.net service rolled out to 500 doctors.	Remote access to clinical data, doctors do catch-up work after hours. System helped Northshore clarify its remote work policies.	Doctors use an array of PDAs and mobile pagers. Organization provides the least-expensive devices because doctors are losing or breaking them.
Overlake Hospital: 337-bed facility in Seattle	Rolled out Aventail.net service to 150 doctors. Beta-testing Aventail EX hardware appliance.	Doctors access patient information from home and from off-campus offices. Obstetricians access fetal monitors in real time as patients near delivery.	Doctors and nurses use Cisco IP phones. Hospital plans to purchase Tablet PCs.

Short Takes

■ At **Comdex** last week, **Netgear** announced its 2003 line of wireless small office/home office hardware. Available next month, the **Netgear Wireless Cable Modem Gateway (CG814)** includes a four-port switch, USB port and an 802.11b access point. A stateful packet inspection firewall and network address translation provide security. Shipping in January, the **Netgear ProSafe Wireless VPN Security Firewall (FVM318)** includes an eight-port switch and improves Wired Equivalent Privacy by adding VPN to secure wireless LAN traffic. It also uses the new Advanced Encryption Standard. It can initiate up to 70 IP Security VPN tunnels over the wired network, and 32 over the wireless LAN. Security features include a stateful packet inspection firewall, intrusion-detection features and virus protection for WAN ports. The device supports all IPSec-based encryption algorithms and AES. The cable modem costs $280. The wireless VPN router costs $1,050. www.netgear.com

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Find out how SSL-based VPNs stack up.

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InSite: Lessons from Leading Users

Freight carrier wraps up Web services

■ BY ANN BEDNARZ

ANN ARBOR, MICH. — Con-Way Transportation Services didn't wait for standards to be ironed out before beginning to experiment with Web services. But now that standards exist, the commercial freight carrier is giving its Web services applications a makeover, with an eye toward decreasing the development burden on its IT staff and its customers' IT resources.

Two years ago, Con-Way began working with raw XML to link its systems with those of its customers, says Jerry Hilts, systems analyst at the $2 billion Ann Arbor company. From the start, Con-Way's intent was to provide better service to its customers, which include retailers, manufacturers and logistics companies. "If we can tie our shipping information to their supply-chain management software, it helps us build tighter and better relationships," Hilts says.

The company viewed XML as an alternative to linking systems via electronic data interchange (EDI), which was too costly for most of its customers and, with its batch-mode processes, not dynamic enough. "EDI works great, but it generally requires that a company make a large investment in EDI. It also is not very real-time, at least the way we've implemented it," Hilts says.

So Hilts and his team created Document Type Definitions — which define the elements and structure of an XML document — and schemas related to common customer transactions, such as requesting a quote, tracking the status of a shipment and submitting a bill of lading.

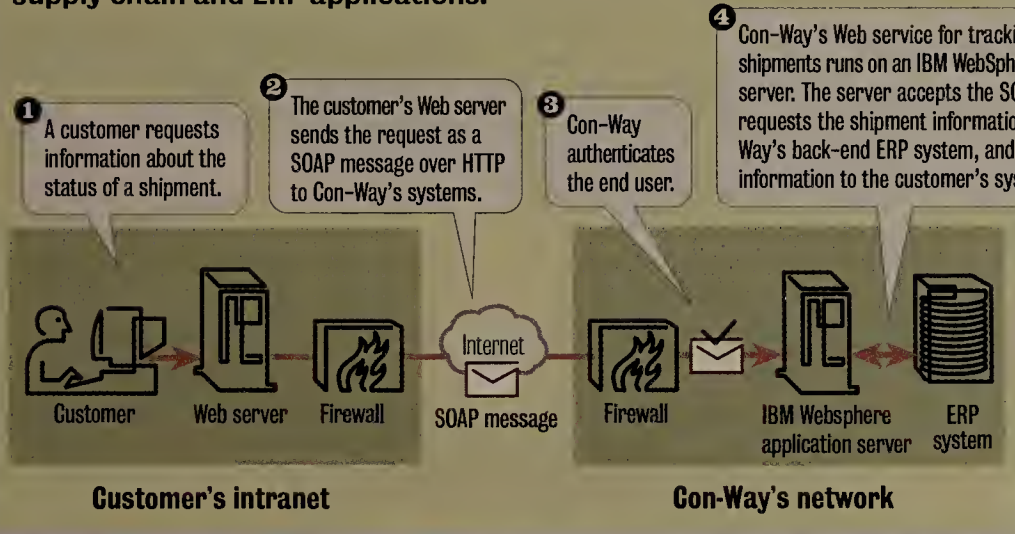
Con-Way made the applications available over the Internet, complete with authentication and encryption features, so that registered users could connect their systems and provide shipment information directly to their employees or customers. "It was really a roll-it-ourselves kind of deal," Hilts says.

Today, Con-Way is ready to launch upgraded versions of its Web services applications. The company is just finishing a migration of its applica-

See Con-Way, page 28

Web services in transit

Con-Way Transportation Services is using Web services to let its customers pull shipping information in real time into their own internal supply chain and ERP applications.



Short Takes

■ **Watchfire** last week announced a version of its Web site quality-assurance software that can check Web pages for accessibility features that computer users with disabilities require. Watchfire's **WebQA 2.0** crawls through Web sites to check for compliance with the U.S. federal government's Section 508 accessibility requirements and the accessibility guidelines the World Wide Web Consortium established. To meet these requirements, Web developers must provide alternative text for pictures, tables and other graphic elements to make it easier for users of screen readers to navigate through Web-based information. The new features come three months after Watchfire acquired Bobby, a leading Web site accessibility tool that was available free of charge from the nonprofit Center for Applied Special Technology. Next month, Watchfire plans to offer accessibility checking with its enterprise software package, WebXM. Available for $1,500 per seat, WebQA 2.0 is client software that runs on any version of Windows. It is designed for developers of Web sites with up to 10,500 pages. WebQA 2.0 also looks for broken links, spelling mistakes, slow-loading pages and nonfunctioning forms. **www.watchfire.com**

Digital Harbor eases integration

■ BY JOHN FONTANA

ANNANDALE, VA. — When the defense industry needed client interfaces that integrated data and application components from a myriad of back-end systems it turned to Digital Harbor. Now, after mastering the defense industry's need, the company is sharing its expertise with corporate users.

The company's Professional Interactive Integration Environment (Piie), which it introduced last week, lets end users drag and drop application components onto a palate to build composite Web-based applications that incorporate data from numerous sources.

"Digital Harbor didn't grow up in the Web services world, but that's what they are," says Mike Neuenschwander, an analyst with Burton Group. "But Web services so far have been about creating interfaces between applications, and they are trying to create interfaces for end users."

But Neuenschwander says the company needs to clearly identify how it fits in between portals, and data and applications integration. "Digital Harbor's product line is like portal software but it goes a little deeper in that it can mix application functionality and data," he says.

Piie uses Java and XML to deliver to just about any client device an interface that consists of windows of live components. But unlike a portal, the components are aware of each other and how they are related in the context of business processes or rules. The system combines data to create context such as overlaying the global positioning coordinates of a tank onto the map of a battlefield. Those pieces of information taken separately don't convey as much information as they do combined.

Version 2.0 of Piie is made up of two components, a SmartClient and a middleware system called Business Ontology, which is used to tie together data and applications components from different systems without the need for Java or C+ coding.

Digital Harbor is among a group of vendors, including Altio, Crossweave, Curl Technologies, Fourbit and Droplets, developing tools for integrating and delivering to front-end clients combinations of back-end software components such as Web services.

Piie's SmartClient supports a set of services for delivering application features. The key is that users don't have to refresh a Web page each time they want new information. Instead, the window displaying that infor-

See Digital Harbor, page 28

'NET INSIDER
Scott Bradner

Prediction: Fast is not everything

The Internet Engineering Task Force has about finished the first set of the IP storage standards, so you should start to see iSCSI and Fibre-Channel-over-IP products soon, at least by some definition of "soon."

IP storage might become an almost-perfect case study for Clayton Christensen to use in a follow-up to his book *The Innovator's Dilemma* because it will so clearly show how hard it is for people already in a business to properly understand the important features of a disruptive technology. I predict that 1) this technology will be very successful, and 2) the main success will be in just the area many professional storage people dismiss as uninteresting.

The idea behind the IETF's IP storage protocols is quite simple. Just encapsulate SCSI, which is used to connect small disk drives to PCs, and Fibre Channel, which is used to connect big disks to big computers in data centers, into an IP-based transport protocol. See the IETF IP Storage Working Group Web page for more information (www.nwfusion.com, DocFinder: 3226).

There were two areas that generated major angst in the early work of this working group. (Not to imply that the working group is now an angst-free zone, but it's better than it was.) The first area was security. When the working group charter was approved, it specifically required that all implementations of the IETF IP storage protocols had to include strong security (for cryptographic data integrity and confidentiality). Users do not need to use them if they do not want to, but the ability to turn these on must be in the product before a vendor can say its product meets the standard. Quite a few working group participants really did not like this requirement — they figured that the main use of these protocols would be in a data center or some other area protected by a firewall. But once you put an application on IP there is no way for the application to be sure where it is being used, for example behind a firewall. This is a major feature of IP.

The second area is performance. A number of people in the working group and the analyst community are quite focused on making sure that the IP storage protocols can run very fast because disk drives are very fast these days. Who would want a slow drive? I expect that the implementations will operate at a high speed. Tests have shown that the Macintosh laptop I have can transfer data at over 450M bit/sec (it has built-in Gigabit Ethernet); I would expect it will be able to run IP storage protocols at nearly that speed.

But the biggest thing IP storage has going for it is the flexibility of IP, and that performance is a secondary issue. In the Christensen book, slower, smaller disk drives won the market over bigger, faster disk drives. The same thing will happen here, and the vast majority of IP storage use will be at low speed.

Disclaimer: Harvard has had a long time to figure out how to do things slowly, but this prediction of the importance of flexibility is my own.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

Site: Lessons from Leading Users

Con-Way

continued from page 27

tion server platform from IBM WebSphere Application Server Version 3.5 to Version 4.0. As soon as that's complete, the new Web services will follow, Hilts says.

"We can do it in WebSphere 3.5, but it's a lot easier to flip on Web services in WebSphere 4.0," Hilts says.

What makes Version 4.0 easier for Con-Way is not that there's less coding to do — there is actually more code generated the new way — but the tools do more of the work, he says. IBM has more tightly integrated its development tools and application server platform in Version 4.0, and the combination lets Con-Way develop new Web services from its Java applications in a quick and relatively painless way, Hilts says.

Even more important, it's easier on Con-Way's customers, Hilts says. "Now they have to look at the raw XML schemas that we've developed, and then parse them and map those into their data structures to feed their Web sites or their [enterprise resource planning] system or whatever they are trying to get the data into," he says.

But not for long.

The new generation of Con-Way's Web services adheres to today's industry standards, such as Web Services Description Language (WSDL), Simple Object Application Protocol (SOAP) and Universal Description, Discovery and Integration (UDDI). Because many customers' applications support these standards, it eliminates a lot of the translation work on the customer side, Hilts says.

WSDL a description language for XML documents, provides a machine- and human-readable view of transactions, which makes it easier for users to handle, Hilts says. Today's development tools can aid in writing the parsing code, for example, he says.

SOAP, which is the transport mechanism for Web services, specifies procedures for common tasks such as error handling, which enables consistency, Hilts says. And UDDI, a group of specifications for Web services directories, eventually could make it easier for customers and partners to find and use Con-Way's Web services, Hilts says.

"The great part about it being all XML-based is it doesn't matter that we're using Java and IBM tools. Somebody else could be using the tools from Redmond," Hilts says.

The Web services applications complement Con-Way's other customer channels: its call center and Web site.

For Hilts and his team, the beauty of the three customer service options is that they share a common infrastructure. Call center representatives working on Con-Way's intranet, customers searching Con-Way's Web site and Web services applications all access a single tracking system — just through different interfaces, Hilts says. "It's only the very edge of the code that's different. They are using common components almost all the way down to the very end of the picture," he says.

Hilts' advice to others considering Web services rollouts is not to fear XML.

"People are a little daunted by XML, but it's not any harder to make an XML display of the data than it is to make a Web page display of the data," Hilts says. ■

Vendors look to pool management data

■ BY DENISE DUBIE

Network administrators soon will have two new options to help them make better use of the data collected by their multiple management tools.

The products, Edge Technologies' enPortal 4.0 and Singlestep Technologies' Unity, pull data from third-party products, present it in one Web-based view and store it for network performance analysis.

EnPortal 4.0 is based on portal technology, but Edge says the software is more than a window into other tools.

Dennis Drogseth, an analyst with Enterprise Management Associates, says the software also can automate workflow, normalize and correlate events, and take action based on user-defined rules.

And while management vendors such as Micromuse, Computer Associates and BMC Software purport to do the same with their portal products, Edge CEO Laurence Chang says enPortal has an edge in that it's vendor-agnostic.

"EnPortal is neutral, so it can help users build relationships between the tools and the events they generate without programming," he says. The software resides on a dedicated server and requests data from management tools in their native language. It then normalizes the data into one common language so events can be correlated more easily.

Start-up Singlestep also plans to address a management data need: integration. The company will unveil its Unity application, which also pulls data from management tools. The software stores all the information in a data warehouse, from which users can generate trend and historical reports. Unity provides visualization tools that let users relate events and model applications by dragging and dropping graphical icons and drawing connections between them.

Both products promise to help network managers improve their IT operations processes and workflow. Drogseth says the products complement each other, but they might become more competitive with each other and with software from companies such as Managed Objects.

"EnPortal can allow management and workflow actions through the portal, and Unity gives IT staff an easy way to integrate domain knowledge," Drogseth says. "They're not doing the same thing, but they're both making software that can help users consolidate and integrate — and essentially get more from — their management investments."

EnPortal 4.0 is available now for about $150,000. Unity is scheduled to be available by early next month and will be priced starting at about $75,000. ■

Digital Harbor

continued from page 27

mation is updated with data streamed from its source on the back end.

The Business Ontology layer works like a database describing how data is related across systems in the context of defined business processes and workflows. The platform ties together existing workflow and rules engines, and message bus technology. It ships with an integrated Java 2 Platform Enterprise Edition server, and runs on Unix and Windows platforms.

Piie comes in an Express version that has just the SmartClient technology with pricing starts at $50,000. The Advanced version includes the Business Ontology middleware with pricing starting at $150,000. ■

Special Report
From Network World Fusion

Network Security Perimeters (NSPs) have become necessary as a result of our increasing dependency on electronic communications via the Internet. In this latest SPECIAL REPORT – exclusively from Network World Fusion – well-known IP networking specialist Chris Ellis covers the issues of NSP design, performance and scalability. Take advantage of this free offer from Network World Fusion and secure your copy of the SPECIAL REPORT: Network Security Perimeters in PDF format today.

Chris Ellis is an IP networking specialist who has spent most of his career as a consultant analyzing, designing and deploying IP networks. His career of over twenty one years has seen a particular focus on the engineering of secure IP networks as well as next generation networks that offer quality of service, high performance and high availability.

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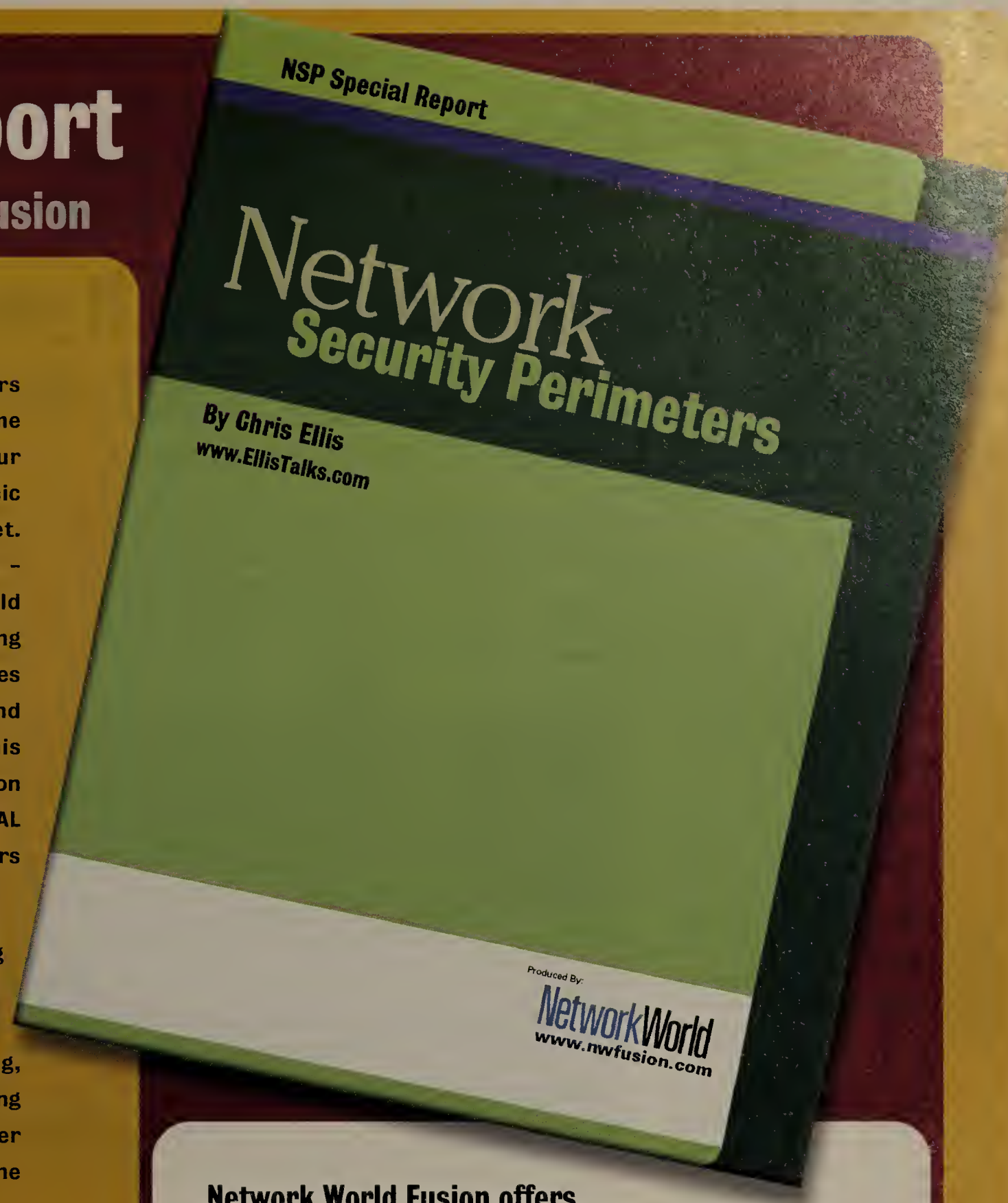

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Special Focus

MANAGEMENT: Self-styled router control.

Managing Cisco routers: Do it yourself

■ BY DENISE DUBIE AND PHIL HOCHMUTH

When it comes to managing Cisco routers, Brian Jones wants to get more than he paid for. The manager of network engineering and operations at Virginia Polytechnic Institute and State University in Blacksburg says the school's IT team discovered a way to save money and staff time, while also managing its 1,454 Cisco switches and 71 Cisco routers more efficiently.

Many vendors, including Cisco, offer tools to simplify managing the gear, but the team at Virginia Tech wrote its own software designed to track device configuration and manage frequent changes.

"You can buy those canned tools for Cisco equipment from software vendors, but then you end up with their view of your network," Jones says.

Whether it's through tapping hidden features in the gear, deploying software tools or training staff, finding innovative ways to manage a large Cisco network can provide cost savings, reduce some tedious staff duties and optimize the equipment's performance. Perhaps it's because vendor equipment dominates most corporate wiring closets and data centers that several network managers have uncovered tips and tricks they're willing to share with their peers in IT operations.

Virginia Tech wrote and uses scripts that can work across Cisco interfaces, ensuring that any engineer can manage multiple devices. Jones says the scripts eliminate the need for the network administrator to be familiar with each piece of equipment and/or its interface to understand what needs to be done.

"We have so much equipment and several people making changes that if we didn't track them constantly, we'd have a real mess of a network," Jones says.

The homegrown application captures all switch and router configurations, and changes made to the devices. All the data is then stored in a repository for easy access in case a network problem occurs. Not only do the scripts ensure accuracy across equipment, they also provide some automation when configuring routers and switches, which saves the IT staff time.

Jones says Cisco made it easier for Virginia Tech to write change management software with the company's own configuration processes.

"With Cisco, it's a text-based configuration file so it's easy to store. With other vendors, there's no way to easily store that data in a repository to view later," Jones says. And he says he considered change and configuration management tools from software companies such as Computer Associates, Hewlett-Packard and IBM Tivoli, but adds that at the time, the wares couldn't track changes across different interfaces on the Cisco gear.

Jones also taps Cisco's NetFlow metering protocol on occasion to take closer looks at potential security breaches. NetFlow is part of Cisco's IOS that collects and measures data as it enters specific routers or switch interfaces, which network managers can choose to activate. The data can be used to monitor key applications, including accounting, billing and network planning, for corporate or service provider customers.

While NetFlow tends to collect volumes of log data — which potentially can slow down a network — Jones says he can spot the top network talkers by tapping the Cisco-specific feature. And he's found that the protocol can provide a bit of extra security on the network periphery because it can gather more specific application and traffic metrics than common protocols such as SNMP can. He keeps the feature turned on in Virginia Tech's edge switches.

SETH GITNER/MPG

"You can buy those canned tools for Cisco equipment from software vendors, but then you end up with their view of your network."

Brian Jones
Manager of network engineering and operations, Virginia Polytechnic Institute and State University

THOMAS BROENING

"Cisco gear is like an unopened box. You buy it and it does what you need. Yet some people don't realize how much more it can do."

David Swan
Senior manager of global network operations, Altera

"If we suspect any security issues, we'll find them in our NetFlow logs. It generates a lot of data," he says.

Open source help

The open source community is another option for inexpensive and easy software tools to manage Cisco networks.

Paul Watkins, a network analyst with Newell Rubbermaid in Freeport, Ill., takes an open source approach to managing the hundreds of Cisco devices on his network.

The home-storage products manufacturer uses a tool called Multi-Router Traffic Grapher (MRTG) to watch over its Cisco-based infrastructure. A SuSE Linux as a virtual server image on an IBM S/390 mainframe is used to run the network monitoring application.

"We use MRTG in lieu of [Hewlett-Packard] OpenView or other expensive monitoring products," he says. The fact that MRTG is a free, open source product without licensing restrictions was a major factor, he adds. "We're not paying $10,000 for some application that we licensed on a per-node basis. And of course, since it's on the mainframe, it runs really fast," he says.

The MRTG application is used to poll about 400 devices worldwide. Rubbermaid uses the tool to monitor the status and make configuration changes to Cisco 2600s and 7500s and Catalyst 6500 switches across the company's WAN.

Because the code for MRTG is open source, Watkins and his co-workers have made some changes to the program's code to make it friendlier with their network.

"MRTG is pretty basic, but we've got a guy who's written some extensions to it that let us automatically add devices through a Web interface," Watkins says, which makes adding new devices and changing the program settings easier.

Watkins says he was not leery of using an open source tool to manage his Cisco network. Especially when he found out that AT&T, his WAN carrier, was using the same program to give the company reports on its routers.

Design issues

In addition to finding untapped features and deploying inexpensive management tools, IT managers with forethought also can design their Cisco networks to provide optimal performance for the price.

David Swan, senior manager of global network operations at Altera, a San Jose maker of programmable logic devices, designed his network infrastructure around one switch family: the Cisco Catalyst 6500 Series.

High-end, fabric-enabled switches reside at the core of the network, where performance is more critical. A midtier version of the 6500 family performs distribution tasks on the network, and on the bottom tier where no routing is necessary, Altera uses low-end 6500 switches.

He says keeping his switch choices in one Cisco family reaped numerous benefits for Altera. Among the plusses are reduced support and maintenance costs, a network full of interchangeable equipment and a simplified architecture that staff with a variety of skill sets can learn and administer.

"We only have to support and stay current in one hardware family and one software set, and that's a lot less confusing," Swan says. "The need, and the cost, to train staff goes down because everyone is speaking the same language."

On a switch-by-switch basis, Swan learned that turning on the 6500's single-router mode features provides fault tolerance on the gear while also lowering the amount of processing power the switch users and reducing IT staff configuration duties.

He explains that a 6500 switch can have two processors running at once, with one serving as a failover mechanism for the other. But without flipping on the single-router-mode option, the one switch acted as two different processors, which required separate configuration and separate maintenance. Swan says he discovered that with the feature on, the two processors act as twins and provide the same failover capabilities. And he says he's sure there's more he can learn about Cisco equipment.

"Cisco gear is like an unopened box. You buy it and it does what you need. Yet some people don't realize how much more it can do," Swan says. ■

Service Providers

■ THE INTERNET ■ EXTRANETS ■ INTEREXCHANGE AND LOCAL CARRIERS
■ WIRELESS ■ REGULATORY AFFAIRS

Short Takes

■ **Sprint** this week is expected to unveil an instant-messaging platform that lets mobile workers connect to enterprise applications and to other employees. Called **Universal Application Messaging,** the service runs on Sprint's recently upgraded wireless network. Employees using the service can be tied to corporate directories with the same access rights they'd have at their desktops. www.sprint.com

■ **Aerie Networks** launched its **Ricochet** mobile high-speed wireless service last week in San Diego. Ricochet lets mobile users connect to the Internet or private data networks at an average speed of 176K bit/sec, Aerie says. San Diego is the second market where Ricochet has reappeared. Ricochet was formerly operated by Metricom, which went bankrupt last year. Metricom shut down the Ricochet network, which operated in 15 metropolitan areas. Aerie purchased the Ricochet equipment and is relaunching the service in cities where the company thinks it can turn a profit. The Ricochet service is available for $45 per month. www.aerienetworks.com

■ **Sockeye Networks** has drummed up **$12 million in its second round** of financing from Baker Capital and Polaris Venture Partners. Sockeye offers route-optimization services for users and service providers. The company offers its GlobalRoute services that it says lets customers with multihomed, dedicated Internet access lines from multiple providers reduce costs while improving performance.

■ **Savvis Communications** announced last week that it is taking over Intel Online's data centers in Chantilly, Va.; London; Santa Clara and Tokyo. Intel announced in July that it would exit the Web hosting business. Savvis will acquire the equipment and software to support each customer that transfers over from Intel. Terms of the deal were not disclosed.

Now that AT&T has cut cable

Experts see shedding of debt as key to reorganized company's future.

■ BY DENISE PAPPALARDO

NEW YORK — AT&T's corporate makeover truly is under way now that it has shed AT&T Broadband, the once coveted but ultimately unwanted weight that the carrier has toted around for the past four years.

Attempting to fulfill the vision of CEO C. Michael Armstrong, AT&T bought its way into the cable network services business by doling out more than $100 billion. The investment was intended to ease AT&T's dependency on incumbent local exchange carriers that carry AT&T customer's last-mile traffic. Instead, AT&T watched its debt load increase exponentially.

Thankfully for AT&T, Comcast has been interested in AT&T's cable business since early 1999. After nearly a year of regulatory review, Comcast officially acquired AT&T Broadband last week for $30 billion and assumed $24 billion in debt. The deal was valued at $47 billion almost a year ago, but sliding stock prices took a toll.

The merger of Comcast and AT&T Broadband includes the departure of Armstrong, who now becomes chairman at Comcast.

AT&T and broadband did not mix well. The combined AT&T Broadband and Comcast are roughly valued at $60 billion — $40 billion less than AT&T's cable investment alone. AT&T didn't seem to see past the fact that cable network services is a slow-growth business with much overhead, experts say. It also didn't seem to realize it was buying a business built around home entertainment and that high-speed data and voices services came much later.

"Broadband stopped being an important part of AT&T the minute Armstrong announced his spin-off plans over two-years ago," says Lisa Pierce, an analyst at Giga Information Group. "That was an implicit admission that his original vision could not succeed. AT&T spent the last two years defending it at every turn, now they can finally admit what many have long said to be true."

AT&T now has only two divisions: AT&T Business and AT&T Consumer. David Dorman has taken over as chairman and CEO.

"Shedding the majority of [its] debt is ultra-important for AT&T," says David Rohde, an analyst at TechCaliber. "AT&T as a company has been maintaining breakeven by almost exactly matching any revenue declines with expense cuts."

AT&T Business is charged with increasing its revenue growth rate to offset a continuing slowdown in residential voice. The company is expected to move more nimbly with the weight of AT&T Broadband lifted.

"AT&T has maintained and is pushing product development to market," Rohde says. "Real proposals we see for migrations to either [Multi-protocol Label Switching] or encryption-based VPN services . . .are from AT&T."

Expense cuts have affected how AT&T operates and deals with customers.

"The expense management forced by the double-whammy of price-driven revenue declines and debt burden has been a real bear," Rohde says.

Some users have "been getting really frustrated with AT&T." Customers cite account team turnover and account representatives with little experience, he says.

AT&T acknowledged some of this recently by saying it has made changes on the sales side. In the past year, AT&T has hired 700 sales associates because of employee turnover, yet it hasn't increased its salesforce. AT&T says the new employees are "experts in complex data networks."

The company promises an AT&T that is more keenly focused on its customers.

"Our culture will reward customer satisfaction, operational excellence and emphasize accountability," Dorman said last week. "Working together, we will continue to scale our growth businesses and maintain our financial flexibility and strength, while locating and capitalizing on opportunities to take market share."

Will Dorman have an effect on AT&T in the near term?

"He will; in fact, he'd better," Rohde says. One of his biggest assets is he's a real "telecom/datacom guy; Armstrong ultimately was not."

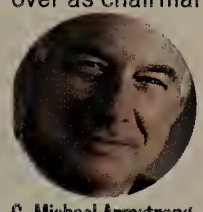
While Dorman will be walking a fine line over the next couple of years trying to keep expenses in check while upgrading and expanding the company's data networks and services, he has two advantages, Rohde says.

AT&T is not in bankruptcy, and it does not have to worry about selling off any additional assets, he says. AT&T now can focus on building its AT&T Business division while controlling the bleeding at AT&T Consumer. ■

AT&T's cable services journey

The company spent $100 billion building AT&T Broadband only to sell it within five years.

November
C. Michael Armstrong takes over as chairman, CEO.


C. Michael Armstrong

February
FCC approves AT&T's merger with TCI.

April
AT&T outbids Comcast with a $58 billion offer for MediaOne.

October
AT&T announces split into four divisions after slow growth and mounting debt.

"Those who say this is a reversal or repudiation of our stance, I find are not only wrong, but offensive."
C. Michael Armstrong

1997 | 1998 | 1999 | 2000 | 2001 | 2002

June
AT&T acquires cable provider TCI for $48 billion.

March
Comcast bids $50 billion for MediaOne.

December
AT&T accepts Comcast's bid for AT&T Broadband.

November
AT&T Broadband and Comcast merger is final. David Dorman takes over as chairman, CEO. Armstrong moves to Comcast as chairman.


David Dorman

More online!

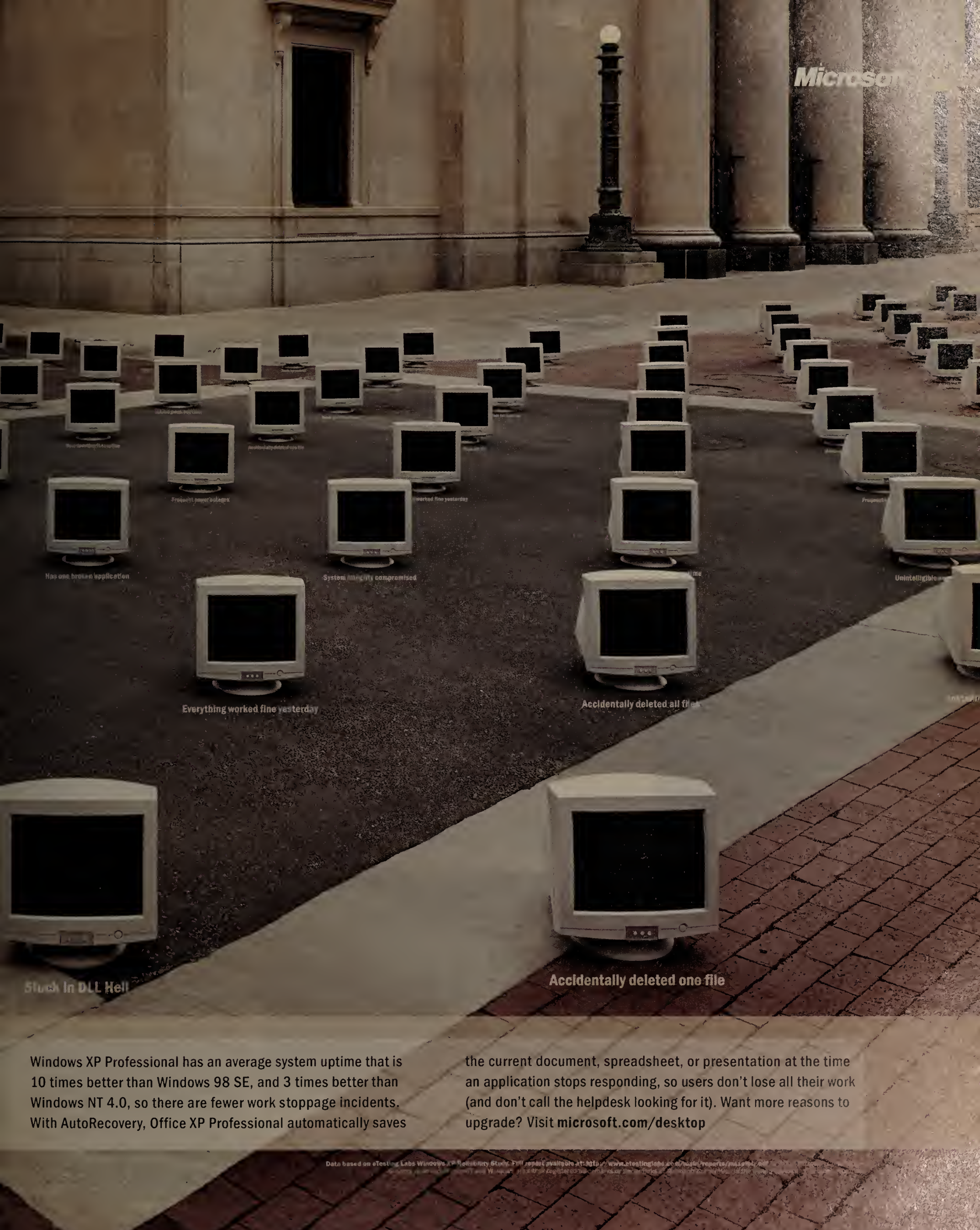
As AT&T moves forward without AT&T Broadband, stay on top of the carrier's latest financial, services and business developments with our breaking-news page.

DocFinder: 3233

Managing desktop reliability can be challenging.

That's why there's Windows XP and Office XP.

Recognize any of those issues? Or, perhaps, all of them? We thought so. That's why we've made Microsoft® Windows® XP Professional and Microsoft Office XP Professional the most reliable desktop we've ever built. Want specific examples?



Windows XP Professional has an average system uptime that is 10 times better than Windows 98 SE, and 3 times better than Windows NT 4.0, so there are fewer work stoppage incidents. With AutoRecovery, Office XP Professional automatically saves the current document, spreadsheet, or presentation at the time an application stops responding, so users don't lose all their work (and don't call the helpdesk looking for it). Want more reasons to upgrade? Visit **microsoft.com/desktop**

Data based on eTesting Labs Windows XP Reliability Study. Full report available at: http://www.etestinglabs.com/studies/reports/microsoft/

EYE ON THE CARRIERS

Johna Till Johnson

Why bankruptcy doesn't fix telecom woes

The latest spin on the recent spate of high-profile telecom bankruptcies is that it makes the industry as a whole more competitive by eliminating debt.

While I've got no dispute that shedding a crushing debt load is a positive thing, it's not the whole answer. A huge — and still unresolved — problem with telecom providers is ongoing operational overhead.

Estimates vary, but most telecom providers place operational costs at 60% to 70% of their overall service delivery cost. That means the continuing drop in bandwidth prices does little to make providers more profitable.

Telecom executives say candidly that their current management and provisioning systems aren't cutting it, particularly when it comes to the newer data services whose traffic volume continues to increase 15% to 25% annually, according to providers we've surveyed.

And the problem is systemic — not something that can be fixed with the right box or hardware package. As telecom services morph from analog voice to next-generation data services, the systems designed for supporting, provisioning and managing them need to undergo a comprehensive overhaul.

Financial analysts generally say the cleanest solution to this problem is bankruptcy. Eliminating debt ultimately frees up capital for hardware and software expenditures.

However, it's not quite that simple. In many cases, the cost of updating outmoded systems is far greater than that of designing these systems from scratch. That means that even a debt-free provider that's saddled with legacy systems (think post-bankruptcy WorldCom) is at a disadvantage compared with newer providers that lack the legacy overhead.

An analogy: Undergoing bankruptcy doesn't turn US Airways into Southwest or JetBlue. Both these carriers have next-generation logistics systems that let them lower operational costs — systems that were built from the ground up and didn't require expensive legacy upgrades.

US Air was built around the old models of the '70s and '80s, which are demonstrably less efficient than the newer approaches. Even a debt-free US Air will have difficulty matching the numbers of a company that's designed from the get-go to operate at a higher level of efficiency.

The consequences for the telecom market is, first, in a scenario in which all other things are equal, newer service providers and those that already have invested heavily in newer data service models are better positioned than legacy players to survive over the long haul. That's good news for, say, a post-Chapter 11 Yipes Enterprise Services. Companies such as AT&T that have moved to implement data-centric operational support systems also are better off than, say, the incumbent local exchange carriers, whose entire processes and systems still are geared to support nearly obsolete analog voice.

Second, IT professionals should have multiple back-up strategies — just in case. One positive outcome of WorldCom's bankruptcy filing is that it opened everyone's eyes to the dangers of overreliance on a single provider. That's a good lesson to take to heart.

Johnson is president and chief research officer at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

The Edge

■ SERVICE PROVIDER DEVELOPMENTS AT THE JUNCTURE BETWEEN THE ENTERPRISE AND THE NEW PUBLIC NETWORK

Short Takes

■ **Nortel** announced last week that Canadian service provider **Telus** is installing Nortel's **voice-over-IP equipment** to migrate its circuit-based long-distance network to a packet-based infrastructure. Terms of the deal were not disclosed. Telus is upgrading its four Nortel DMS circuit switches with Nortel's Succession Communication Server 2000 softswitches. The service provider also is installing Nortel's Passport Packet Voice Gateways in 11 locations across Canada. VoIP traffic will be transported across Telus' existing optical network, which is based on Nortel's OPTera Long Haul 1600 optical line system. Telus also will deploy Nortel's Succession Centrex IP service system, and is trialing Nortel's Succession Interactive Multimedia Server for delivery of Session Initiation Protocol-based personalization, collaboration and other multimedia services.

■ **The Metro Ethernet Forum** last week announced the establishment of a relationship with the **International Telecommunications Union** to facilitate the implementation of metropolitan Ethernet standards. The forum said it will deliver its **Metro Ethernet Services** specifications by mid-2003. Also, the forum's technical committee moved 16 technical documents pertaining to Ethernet services, protocol and transport, management and architecture to ballot or straw ballot phase; and advanced to draft status the Ethernet Interworking Network-to-Network Interface technical specification. This specification will let service providers interconnect and extend service coverage.

■ **Somera Communications**, a provider of telecom equipment deployment services, recently announced that it is now supporting Riverstone Networks' RS metropolitan routers. Somera will offer network operators programs that let them **exchange equipment** for Riverstone technology.

New high-end routers emerge

Despite dour telecom market, big-ticket products keep on coming.

■ BY JIM DUFFY

Alcatel and Chiaro Networks last week became the latest entrants — or re-entrants, in Alcatel's case — in the core router market, a space with high barriers to entry in terms of development cost, long sales cycles, two entrenched and dominant players, and reduced customer spending.

Alcatel announced the 7770 Optical Broadband Exchange (OBX), a respin of its 7770 Routing Core Platform that was an ambitious attempt at terabit scale first announced in late 2000 and shipped in mid-2001. Carriers, however, requested Alcatel start over with a smaller footprint that would fit in their equipment racks.

Alcatel has now scaled down the 7770 into a half-rack system. The OBX features 100G bit/sec of line capacity and a 320G bit/sec switching fabric per half-rack shelf.

Alcatel says the half-rack design makes the router more versatile, letting it support smaller core and edge applications in addition to large core requirements.

Alcatel's OBX retains the 7770's distributed switching and forwarding architecture, and cards from the Routing Core Platform are forward-compatible with the OBX, company officials say. The system includes its Alcatel Carrier Environment Internet System (ACEIS) fault-tolerant routing technique for 99.999% reliability in one system.

Alcatel says ACEIS eliminates the need to deploy a duplicate router for redundancy.

Nine racks of OBX line cards, switching and control shelves result in 1.9 terabit/sec of line capacity and greater than 5 terabit/sec of switching, Alcatel says.

The market for core routers will grow from $1.3 billion this year to $2.1 billion in 2005.

Analysts say Alcatel's re-entry into the core router market could prove fruitful.

"They have a legitimate chance at making a dent" in the market, says Mark Bieberich, an analyst with The Yankee Group. "They've done a couple of things with this product that differentiate it from the core routers that are in the market today. They've engineered it for a longer lifespan. Instead of your typical five- to seven-year cycle, it doubles that. Second, their reliability technology is very sophisticated and arguably the best reliability technology in the marketplace today. Alcatel has the staying power to lock-in that No. 3 spot [behind Cisco and Juniper Networks, and now occupied by Avici Systems] in 18 months or so."

Meanwhile, Chiaro offered a preliminary glimpse into its Enstara router, an optical crossbar switch that leverages optics to switch packets internally between line cards. Chiaro says it has 50 patents issued on Enstara's design, including a so-called Optical Phased Array (OPA) technique that uses scores of gallium arsenide optical waveguides in parallel to refract light, under electrical stimulation, from a single ingress fiber to multiple egress fibers.

OPA uses interference patterns to bend light to desired destinations, Chiaro says, and can achieve switching speeds of 30 nanosec. A 64x64 Enstara switch with 128 connectors is about the size of a briefcase, company officials say.

Enstara is capable of supporting "hundreds" of 10G bit/sec interfaces in its initial release, Chiaro officials say. It is shipping and is deployed now at the California Institute for Telecommunications and Information Technology next-generation grid network, OptIPuter.

Chiaro's router also will feature 99.999% reliability without a redundant router, officials say, through a technique called Stateful Assured Routing (STAR). Like Alcatel with ACEIS, Chiaro is tight-lipped about how STAR works, but it is designed to provide nondisruptive routing protocol switchover in the event protocol resets and route convergence times cause outages.

Chiaro says it does this by maintaining TCP state and sessions during resynchronization. Failover is undetectable by a Chiaro routing peer, they say, and packet forwarding is uninterrupted.

Chiaro promised to unveil more product details, along with another customer deployment, early next year.

Enstara and OBX will be the latest attempts to chip away at a market barrier erected by Cisco and Juniper in which Avici has made less than a 3% dent. A handful of others — such as Hyperchip, Procket Networks, Caspian Networks and Charlotte's Web — also are trying to break in.

Avici, citing analyst figures, says the market for core routers will grow from $1.3 billion this year to $2.1 billion in 2005.

Meanwhile, analysts say carriers have halved their capital expenditures from 2000 levels, making sales to a customer that typically took 12 to 18 months to fill out a purchase order even more languid.

But unlike Alcatel, which has a strong and lengthy heritage in building carrier-class telephony equipment, Chiaro is an unproven start-up in a market that is currently brutal to longtime players, let alone newcomers.

"It's a very unique approach to building a switch fabric," Yankee Group's Bieberich says of Chiaro's OPA.

"But beyond that, whether or not it's going to gain traction in the marketplace remains to be seen. Their customer base is going to want them to prove that they're going to be in this market for at least three years. That's by far Chiaro's biggest challenge," he adds. ■

Ready for duty?

Some problems with current IP networks include:

- Unreliable enterprise-grade products.
- Make current IP architectures too costly.
- Customers are still wary about migrating mission-critical applications.
- Scalability is either nonexistent or impractical.
- Lack of scalability drives total cost of ownership sky-high.
- Current routers are designed to last 12 to 18 months in a network.
- Traffic management has been a missing component.
- SLA payouts are too rampant.
- Automation is missing.

SOURCE: ALCATEL

Ready To Take The SAN Plunge?

Storage area networks are making a pretty big splash these days. You've heard that they are cost-effective, they can help you consolidate storage and that they improve the backup/restore process.

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Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

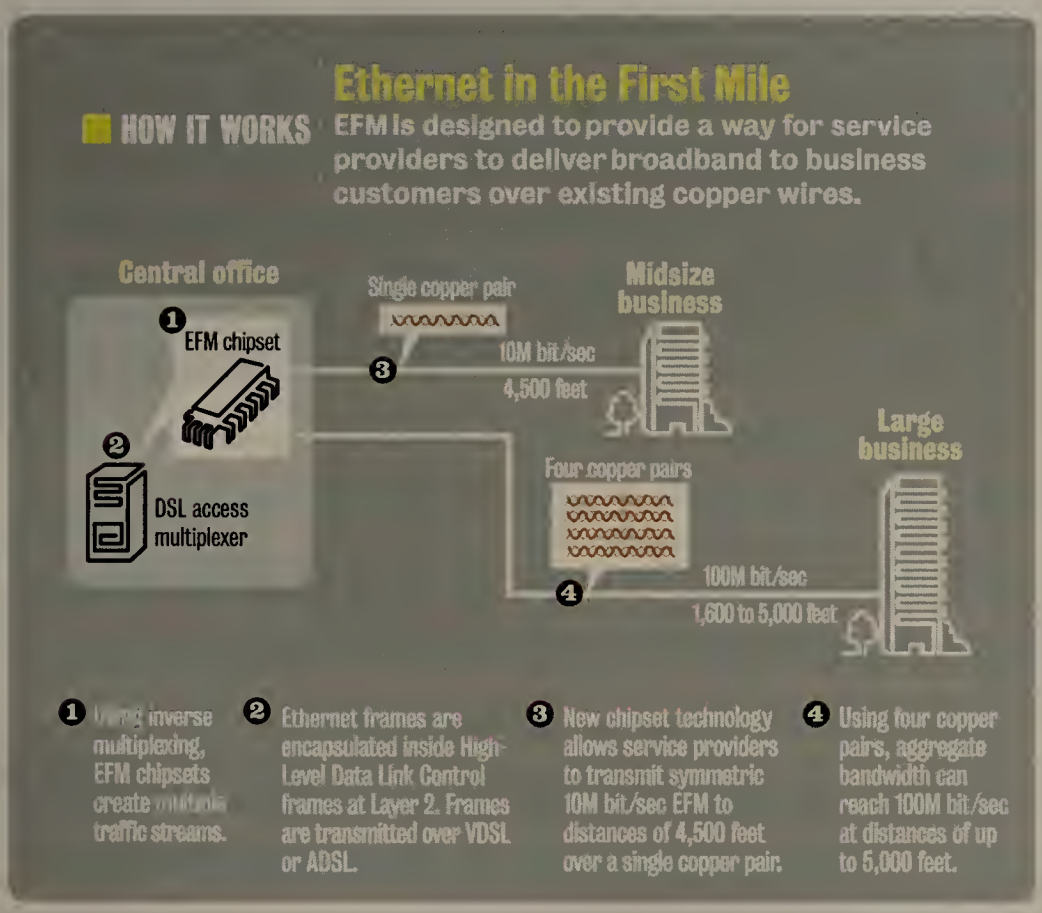
Ethernet in the First Mile reuses copper

■ BY RICHARD SEKAR

One key carrier challenge in metropolitan networks today is bringing broadband access to customers not currently served by fiber. An emerging standard, Ethernet in the First Mile, holds the promise of making copper a viable alternative to fiber in the enterprise and metropolitan loop.

There are two approaches to delivering Ethernet over copper: Encapsulate Ethernet traffic into either ATM cells or High-Level Data Link Control (HDLC) frames. In the first approach (RFC 2684), Ethernet traffic is encapsulated over ATM Adaptation Layer 5 into fixed-length cells. Packets are segmented into 48-byte increments to fit ATM cell payload, and 5 bytes of header are added, creating a stiff "cell tax" for large datastreams.

HDLC, on the other hand, transmits the entire Ethernet stream in one frame, with only 4 bytes of header and 2 bytes of cyclic redundancy check for error checking. This is one of the proposed methods of the EFM IEEE 802.3ah working group, which promises point-to-point Ethernet of 10M bit/sec for up to 2,460 feet over copper.



Inverse multiplexing adds reach

To increase speed, reliability and distance of EFM over last-mile copper, some equipment vendors use software-based inverse multiplexing and transmit the protocol over multiple copper pairs. Now a new programmable silicon technology provides inverse multiplexing in hardware, bringing added speeds and reliability to local-loop transmission.

This new chipset technology can transmit symmetric 10M bit/sec EFM to distances of 4,500 feet over a single copper pair, and can attain higher bandwidth with more pairs. For example, using four copper pairs, this technology can inverse-multiplex EFM to speeds of up to 100M bit/sec for 1,600 feet (or up to 5,000 feet with more pairs). Because inverse multiplexing happens at Layer 1, it's automatic; equipment vendors see only one channel.

Traditional Ethernet services, such as 10Base-T and 100Base-T Fast Ethernet, are limited by the quality of the wiring, requiring multiple pairs and Category 3 and Category 5 for transmission distances of only 300 feet. This situation is exacerbated in the first mile, where outside plant quality can be affected by weather, spectral interference and other issues. Silicon-based EFM relieves equipment vendors from dealing with loop problems, providing on-chip quality of service (QoS).

On-chip QoS automatically adapts to the conditions of the loop seamlessly. Thus, with on-chip QoS, EFM can operate on any wiring that exists today and can deliver Ethernet services reliably over longer reach.

For example, when using four copper pairs to transmit Ethernet at 100M bit/sec, the chipset monitors the pairs to ensure the total aggregate bandwidth remains consistent. If one pair out of four goes down, the chipset can automatically throttle the speeds of the remaining three pairs and maintain the link (albeit at less than 100M bit/sec). Equally important, the four loops can be in different binder groups, can have different lengths, and can have different quality characteristics. The chipset automatically adapts to the conditions of the loops available to it.

Support for multiple link-layer standards

Another advantage of on-chip EFM is its ability to transmit Ethernet over a variety of link-layer standards running on the copper plant, including very-high bit rate DSL and asymmetric DSL, on a programmable basis. These chipsets can be easily deployed in a DSL access multiplexer, broadband access concentrator, miniremote access concentrator, customer premises equipment and residential gateways.

On-chip EFM is spectrally compatible with existing copper-based telephone company services such as plain old telephone service, ISDN and DSL. On-chip EFM technology currently is being implemented by a number of equipment vendors, enabling carriers to offer 10/100M-bit/sec Ethernet services over standard telephone company copper.

This technology is well suited to the most demanding broadband applications, including videoconferencing, VPN for telecommuters, triple-play services (video, voice and Internet) and online gaming.

Sekar is vice president of marketing at Ikanos Communications. He can be reached at rsekar@ikanos.com.

Ask Dr. Internet

By Steve Blass

My supervisor reprimanded me for testing two utilities: A full-featured commercial port scanner and an e-mail verifier that verifies e-mail addresses by connecting to e-mail servers via Simple Mail Transfer Protocol. The supervisor said using these utilities exposes us to attacks by hackers. I know that port scanning might irritate other administrators (and could be illegal?), but how does it expose us to an attack? Same for the e-mail product: How does connecting to an e-mail server via SMTP expose us? The rationale I was given is roughly, "these hackers can do anything, they have all sorts of tricks — you just don't understand." That level of paranoia defies common sense. What do you think?

If software talks to the network then there is always the possibility that it is covertly communicating with some outside entity. One should only install software from trusted sources and even then only carefully. Trusting commercial and open source sites to distribute honest software is less of a danger to system administrators than not knowing or simply ignoring network security policy regarding Internet downloads and unauthorized software installation.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.

GEARHEAD INSIDE THE NETWORK MACHINE

Mark Gibbs

Getting under the hood of ASP

This week we're going to embark on explaining something that most of you know about, but from the letters we get, many of you would like to understand more thoroughly. That something is Active Server Pages (ASP), a method for creating dynamic Web pages that was invented by Microsoft and has started to spawn workalikes for non-Microsoft platforms.

First, a little history that will lead us off into the geeky depths of programming techniques: The background to ASP lies in Microsoft's Internet Server API (ISAPI), which was created to overcome the problems caused by the Common Gateway Interface (CGI).

We discussed CGI some gazillion columns ago but let's quickly recap: CGI is a mechanism by which an application on a Web server is launched on receipt of an HTTP request and is passed variables. The application executes, does whatever it does with the variables and optionally returns a datastream (usually in HTML format) to the sender of the original request. (The sender of the request is usually a Web browser, but it could be any application.)

The problem with CGI applications is that a separate instance of the application is launched for each request, each of which uses up memory and processor cycles. Because of this, CGI applications are usually resource hogs, so a heavily loaded CGI-based system doing real work such as driving a database-driven online shop can exhaust even the most powerful of servers.

Microsoft's ISAPI attempted to solve the resource problem by using Dynamic Link Libraries (DLL). The DLLs are loaded into the Web server's memory space, and by being "thread-safe" a single ISAPI DLL can support multiple requests.

We should take a short diversion here to explain what "thread-safe" means. A thread is a unique execution of a process using code that might be shared by other processes. Think of each thread as a different context of execution rather like several people reading the same book. One might be further ahead than another so each has the same process (book) but different contexts (places they are reading).

Note that a thread-safe environment doesn't guarantee efficiency or reliability. This is because: a) while memory usage might be reduced the computational cost of thread switching (jumping from the context of one thread to the context of another and back again) might be significant; and b) you can't guarantee that a thread-safe environment is reliable!

Now a program that is thread-safe has a) no race conditions; b) does not deadlock; c) has no priority failures; and d) no starvation failures.

A race condition means that multiple threads can read and write to the same memory. If a race condition exists, it can result in incorrect data being read and or written. When a race condition occurs, the result is usually catastrophic, with programs operating on meaningless data.

Deadlocks are a condition in which each thread in a group of threads gets stuck waiting for another thread in the group to finish what it is doing.

For example, Thread A locks access to a region of memory, M, and Thread B locks memory region N. Thread A then tries to copy M to N and can't because B has N locked, and B tries to copy N to M and can't because A already has locked M. As they are each waiting for the other to unlock its memory region, a deadlock occurs.

A priority failure occurs when a thread fails to complete its work before another thread needs the results. What happens to the dependent thread is determined by how the thread's process performs error recovery — something that can be difficult or impossible in a multiple-thread environment.

In a computer-controlled cooling system, if Thread A needs the temperature to be available to set the heat output and Thread B hasn't finished reading the temperature because its priority is low, Thread A will wind up frequently acting on old data. The result will be an oscillation around the target temperature value because of continuous over- and undershooting. This would not be a problem in a house, but in a nuclear power plant ... well, we wouldn't want to live near it.

Darn, we've run out of space, so suspend your Gearhead thread until next week.

Requests to gearhead@gibbs.com.

CoolTools

Quick takes on high-tech toys

By Keith Shaw

MicronPC launches high-end desktops

MicronPC has launched two high-performance desktop products (the Millennia 910i and 910a models) for small businesses and consumers.

The 910i includes an Intel Pentium 4 processor at 3.06 GHz with Hyperthreading technology. MicronPC says the 910a is one of the first systems to offer the AMD Athlon XP 2800+ processor with the nVidia nForce 2 chipset.

The desktops are available in MicronPC's Professional, Creative Studio and Xtreme Series. The Professional is designed for businesses, and come with software such as Microsoft Office. The Creative Studio is for digital media users, so software such as Pinnacle's Studio Version 8 video editing suite is bundled. The Xtreme systems are aimed at high-end gamers, MicronPC says.

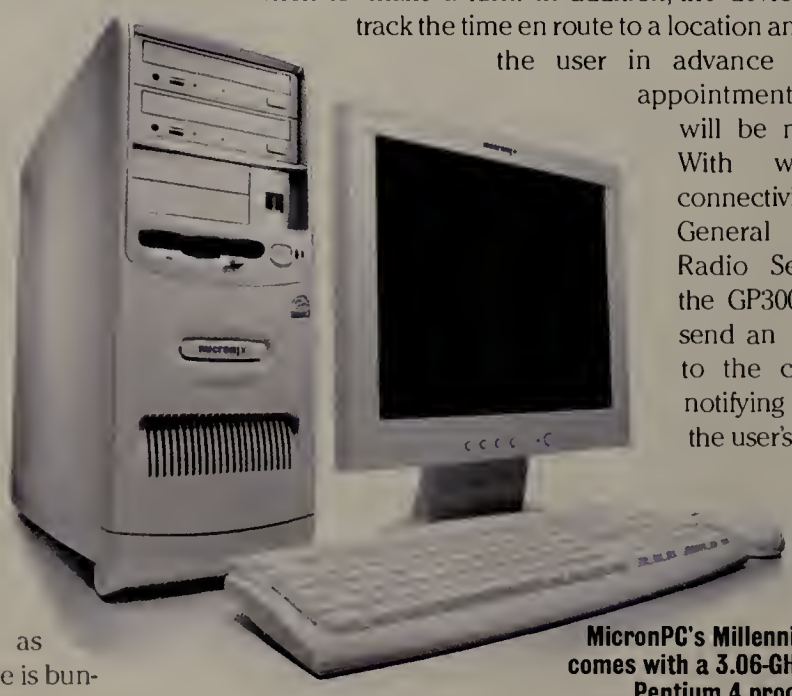
Both systems start at $2,000. For more information and system details, go to www.micronpc.com.

For the man who won't ask for directions

CPware has a product that links Outlook Calendar appointments with car navigation on a Pocket PC device equipped with a Global Positioning System (GPS) receiver. GPware's GP2000 and GP3000 units provide voice navigation to give users directions to their next appointment.

For each appointment, a user enters "@(Contact Name)" in the location field. When the calendar is synchronized with the Pocket PC, the GPware software takes the address from the contact name and maps directions for the user.

The GPware navigation module uses the GPS receiver to provide the user's current location. Voice cues tell the user when to "make a turn." In addition, the devices can track the time en route to a location and alert the user in advance if the appointment time will be missed. With wireless connectivity (via General Packet Radio Service) the GP3000 can send an e-mail to the contact notifying him of the user's status.



MicronPC's Millennia 910i comes with a 3.06-GHz Intel Pentium 4 processor.

The GP2000 and GP3000 (wireless connectivity sold separately) cost $300 and include the Pocket PC software, a GPS receiver and Pocket PC mount for use in a car. For more information, go to www.gpware.com.

HP ships new flat-panel monitors

Hewlett-Packard says it is shipping the 15-inch Compaq TFT1501 and 17-inch TFT1701 flat-panel monitors. A high-performance 18-inch model (the TFT1825) and 20-inch model (TFT2025) also are available.

The TFT2025 flat-panel monitor includes a picture-in-picture feature, which lets you watch television while you work.

The TFT1501 costs $360 and is offered as a low-price alternative to CRT monitors. Anti-static and antiglare technologies come with this model, HP says. The TFT1701 costs $560 and includes a 1,280-by-1,024 pixel SXGA resolution. It is aimed at large business and government markets.

The TFT1825 includes portrait and landscape viewing, a high-adjustable base and a thin bezel edge, HP says. This lets users place up to four panels together to maximize the information displayed. The TFT1825 costs $900. The TFT2025 has a 1,600-by-1,200 maximum resolution on a 20.1-inch viewable screen. It has advanced video inputs and picture-in-picture features, which lets users work and watch television simultaneously. The TFT2025 costs $1,500. Go to www.compaq.com/products/monitors for more details.

200G bytes of raw storage

Other World Computing has introduced three Mercury Elite Pro external FireWire storage products that have 8M bytes of cache and storage for 200G, 180G and 120G bytes.

The models measure 1.5 by 9.0 by 5.5 inches and weigh less than 3 pounds. Other World says the drives offer plug-and-play convenience for transfer between the office, home or off-site computers.

The drives ship with Intech HD SpeedTools, a FireWire cable and external power adapter. They work with Windows 98, 2000 and XP, and Mac OS 8.6 and higher. The 200G-byte 7200RPM model costs $500; the 180G-byte 7200RPM costs $450; and the 120G-byte 7200RPM costs $300. Go to www.macsales.com for more details on the devices.

Shaw can be reached at kshaw@nww.com.

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opinions!

EDITORIAL

Sandra Gittlen

Are you ready for GigE to the desktop?

You could hear the reluctance in their voices. Network executives who attended the first leg of our State of the LAN/MAN tour were vocal in expressing their concerns about Gigabit Ethernet to the desktop.

While companies such as Alcatel, Cisco, Extreme Networks, Finisar and Foundry Networks were describing the glories of Gigabit Ethernet-enabled desktops, network managers in the audience were wincing. They say it's all going too fast.

They worry that there will be too much juice going into PCs, raising unreasonable expectations among end users (see related letter, right). They worry about their cable infrastructure not being able to support Gigabit Ethernet to the desktop. They worry about bottlenecks popping up elsewhere. They worry about the lack of applications tuned to run at gigabit speeds.

Pshaw, the vendors say. Foundry's Joe Tomasello rattled off a litany of current and emerging applications that would make good use of the firepower: medical imagery, digital content creation, data warehousing, data mining and cluster computing.

Others on the panel jumped to his defense, saying the list of applications that can take advantage of gigabit to the desk is growing — interactive gaming, interactive video, interactive everything.

The audience remained skittish. Many wanted to known how soon they need to start outfitting their shops to support Gigabit Ethernet, and how soon before they need to trudge into the CxO's office asking for a budget increase?

One attendee, who was doing a forklift upgrade to a new headquarters several blocks from his old one, said even with the budget freedom that comes with moving to a new building, he couldn't see justifying the move to Gigabit Ethernet.

But companies such as Dell are pushing ahead. Dell says that 10/100/1000M bit/sec Ethernet will be standard on all commercial desktops within two years via LAN on Motherboard technology. IBM, HP and other PC makers are similarly bullish on Gigabit Ethernet.

In other words, Gigabit Ethernet will be on the desktop in short order, whether you want it there or not. Of course, you don't have to turn it on, and can simply continue to run Fast Ethernet or 10M bit/sec Ethernet, but once end users have a capability on their desktop, they tend to want to use it to the fullest extent.

One attendee summed up the discussion by saying Gigabit Ethernet to the desktop is a technology with no problem to solve.

What do you think? Let me know.

— Sandra Gittlen
Events editor
sgittlen@nww.com

Looking forward to GigE

Regarding "Gigabit to desktop? Not so fast" (www.nwfusion.com, DocFinder: 3229): Certainly there are few applications that require bandwidth of 1G bit/sec, but how many of us would appreciate shrinking throughput?

When I sync my Outlook mail, if I can get the large e-mails just a few seconds faster (multiplied by several times per day), that is noticeable and I will pay money for it. Faster Web pages, server connects and e-mail exchanges are all noticeable and, therefore, valuable.

In my office, we have 100M bit/sec to the desktop, but the IT department caps everyone at 200K bit/sec to manage contention and bandwidth hogs. If we upgraded to 1G bit/sec, theoretically IT could reset my cap to 2M bit/sec.

In short, I welcome Gigabit to the desktop, not because I move gigabits of data, but because I would like to move my kilobytes of data 10 times faster.

Barry Evans
Austin, Texas

Carrier connection

Your story "Nortel finally set for VoIP charge" (DocFinder: 3228) doesn't mention Nortel's carrier VoIP portfolio. The way the story reads, one would believe that Nortel hasn't seriously ventured into VoIP until now. While Nortel's enterprise offering was "brought up to speed with chief rival Cisco," Cisco doesn't even have a carrier offering.

I think getting the carrier products right first helps designers learn some critical lessons that will only boost reliability in the enterprise.

Patrick McNeil
Fairport, N.Y.

E-mail letters to jdix@nww.com or send them to John Dix, Editor In Chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

Another option

The story "IETF speeds transfer of huge files" (DocFinder: 3227) discusses a new framework for facilitating the rapid distribution of large files to many recipients that has come out of the IETF's Reliable Multicast Transport working group.

But what was omitted from this story was the fact that multicasting as envisioned hasn't been successfully implemented, save for a few small network islands. Further, what is, for many, the central issue — the intranet — was missed entirely.

A solution that fits the enterprise environment can be designed with the efficiency of multicast, but not necessarily with IP-multicast at the network level. Companies already have network resources that are underutilized and can be exploited to perform this efficient distribution of electronic files throughout the enterprise: desktop and laptop computers used by employees.

The system that utilizes these resources to meet the distribution challenge is mediated peer-to-peer networking with network time shifting. It uses multicast technology at the application layer to provide network efficiency using desktop and laptop computers as application-layer multicast forwarders.

Haim Neerman
CEO
Bandwiz
Framingham, Mass.

Get specific

I was happy to see another article on fiber to the home ("Fiber to the home market in gear," DocFinder: 3232), but these types of articles are always way too vague. Readers might benefit more if you outline what it takes to build such a network, including technology and cost options.

John Smith
Wenatchee, Wash.

More online! **www.nwfusion.com** Find out what readers are saying about these and other topics. **DocFinder: 3224**

BOTTOM LINE

Joel Snyder

IPS: A technology, not a product

Intrusion-prevention system is the new buzzword this week. A combination of intrusion-detection brains and firewall placement, IPSs take a new tack on protecting corporate networks. The concept is simple: When intrusion detection notices a problem, intrusion prevention blocks the bad traffic.

The implementation is a lot more difficult. As *Network World* showed in this year's review of intrusion-detection systems (IDS), vendors haven't figured out enterprise-level management of IDSs (see "Crying Wolf: False alarms hide attacks," www.nwfusion.com, DocFinder: 3223). Avoiding false alarms requires tuning the IPS within an inch of its life, or using a much less comprehensive rule set than the IDS world supports.

In the meantime, firewall vendors have been quietly adding IPS features to their products. Cisco has integrated technology from its Wheel Group acquisition into PIX and IOS; NetScreen already had quite a few IPS features (and probably will be adding more since it acquired IPS vendor OneSecure); and Check Point Software has built the SmartDefense system into newer versions of its Firewall-1 NG product. It's not just firewall vendors that are getting into the act. Switch and load-balancing company TopLayer Networks is adding IPS features to its product line as well.

Despite this handful of firewall manufacturers getting involved in IPS, the overall sector has been asleep at the switch, content to sit on market share and drive the idea of stateful packet filters as far as they can go. The interest in IPS is good because it will get more firewall and switch developers to start thinking again about new tools to help keep networks secure at the core and edge.

So what does this mean for network managers? IPS technology is just that: a technology. It's not a product. An IPS has to go into core network choke points to be effective. While the idea of a "pure" IPS product might appeal to vendors looking to capitalize on the current mania for security, it's not a long-term bet.

Instead, you're going to see the folks who are already at the core of your network — the firewall vendors, switch vendors, load balancers and such — using IPS technology to improve their products. A good IPS combines the long-standing intelligence of high-speed switching and firewalling with the new thinking from the IDS world.

IPS also means an opportunity for greater knowledge and control over what's happening in your network. Security managers have a new dimension of thinking to add to their repertoire.

Over the next year, it's not going to be just TCP ports and URL filtering, but a more intimate look at traffic flowing into and through the network. If you haven't had any training on IDS techniques and technologies, 2003 is a good time to attend a seminar to learn more about intrusion prevention.

Snyder, a Network World Test Alliance partner, is a senior partner at Opus One, a consulting and IT firm in Tucson, Ariz. He can be reached Joel.Snyder@opus1.com.

The concept is simple: When intrusion detection notices a problem, intrusion prevention blocks the bad traffic.

INDUSTRY COMMENTARY

Frank Dzubeck

DSL buyer frustrations continue

In a previous column (see www.nwfusion.com, DocFinder: 3225), I described my difficulties in having DSL installed in my office two years ago. My frustrations continued in September when a slow degradation of line quality became an outage of uncertain nature. Neither the ISP nor the competitive local exchange carrier could find the cause of the problem, attributing it to customer premises failure or configuration error. Testing on our end indicated no such errors or failures existed.

A CLEC dispatch took more than four hours to find the local exchange carrier (LEC) local-loop access frame wire pair. The reason was not incompetence but confusion. The CLEC records indicated a demarcation point (dmarc) in my building, but no "tagged" LEC circuit existed in the frame. The CLEC found a tie connection to another building where the LEC placed the dmarc upon installation. The CLEC requested a LEC dispatch to replace the wire pair and install the dmarc in the proper building.

Then the fun began. The LEC dispatched, reported a pair replacement with good quality and refused to relocate the dmarc. We still could not pass data and reported the continued outage to the ISP. The ISP, working with the CLEC, escalated the problem and received another LEC dispatch. The LEC, because of the incorrect content of its premises/wire-pair database, had "fixed" a circuit at another location.

Again, the ISP and the CLEC requested that the LEC relocate the dmarc to the correct address, which would remove the tie connection and correct the LEC's database. The LEC refused, stating that the dmarc was the same physical address pursuant to the contents of its database, and that the CLEC had to place a new circuit order for any correction to occur.

The ISP requested my permission to order a new install, which would solve the problem but would require a complete new set of IP addresses for the PCs on our LAN and router. We decided to have the problem solved and live with this minor inconvenience. The ISP placed the order, and it was rejected by the LEC for an incompatible address and telephone number. Again, this was a database problem; the LEC had relocated our telephone lines within the frame to fix a recurring "disappearing line" problem to the new physical address almost a year before, but the update never got into the database. We finally found a physical premises telephone number that was in its database and the ISP resubmitted the order. The LEC installed the new circuit in the wrong location not once but twice. In each case a CLEC dispatch was required to uncover the error.

The CLEC then escalated the problem and gave the LEC a wire pair location for the dmarc in the frame in our building. The LEC issued a new installation ticket and again the circuit was installed in the wrong location. The CLEC requested an on-premises meeting with the LEC. The LEC refused, and again performed an installation in the wrong location. Regulatory procedures then allowed the CLEC to demand an on-premises meeting to resolve the problem. Finally, after six weeks, a new circuit, in the correct location, was operational.

This unfortunate situation highlights a serious issue — the state of the LEC wireline database. After divestiture, the ownership of the inside-building wire plant was passed to the premises owner, but the responsibility for maintaining the customer frame wire-pair database remained with the LECs. Automated tools were created to allow technicians to access the information and assign wire pairs to circuit numbers. Unfortunately, an inventory audit procedure was never put in place to assure the accuracy of the database and maintenance updates.

At the central office, wireline maintenance and database update are automated. At the premises frame level, cost prohibits such automation, forcing the LEC to use manual procedures. This is a major problem in the U.S. As I have experienced, the customer is always the loser in the battle between the LECs and the CLECs. The wireline database problem is so critical that it only can be solved by a Federal Communications Commission mandate, not negotiation.

Dzubeck is president of Communications Network Architects, an industry analysis firm in Washington, D.C. He can be reached at fdzubeck@commnetarch.com.

As I have experienced, the customer is always the loser in the battle between the LECs and the CLECs.

Boxes

Vendors are making noise with appliances that aggregate multiple functions and offer virtualization of network services in the data center.

■ BY PETER RUBER

Your data center topology is starting to scare you. You've got firewalls connected to VPN termination devices connected to load balancers connected to intrusion-detection systems, Secure Sockets Layer (SSL) offloaders, distributed denial-of-service appliances, caches — all sitting in front of your server farm and back-end data storage.

The downside of having so many appliances and servers chained together is obvious. It's hard to manage them, hard to troubleshoot them, hard to upgrade. Then there's the physical clutter of all those racks and appliances and cabling in your data center.

But a number of companies are attacking the problem with hardware-based megaboxes that aggregate multiple functions into a single high-performance unit (see graphic, 43).

Other vendors are taking the additional step of providing configuration and management features that let companies and service providers "virtualize" the network functions inside the data center.

For example, Inkra Networks is selling a data center switch that combines firewall, load balancing, SSL acceleration, Web acceleration and VPN in one ASIC-based appliance. Inkra co-founder Dave Roberts says Inkra has developed all of the modules from the ground up.

Taking a different approach, Crossbeam offers an appliance that comes preloaded with best-of-breed security products, such as firewall, VPN and intrusion detection, from leading vendors.

But Inkra goes beyond simply aggregating point products. It also is touting its ability to create virtual racks within a single, physical Virtual Service Switch. Each virtual rack can be configured, deployed, scaled, upgraded and partitioned on the fly.

Similarly, Nauticus Networks is developing a data center switch that does Web application switching, SSL-based authentication and encryption, plus load balancing. The Nauticus Application Switch also offers virtualization, so a single switch can be sliced into multiple virtual switches.

The benefit for companies and service providers is the ability to simplify data center management on the back end and to better serve customers and end users on the front end. For example, service provider Savvis Networks is installing an Inkra 4000 Virtual Service Switch. "We'll be getting rid of hundreds of rack-mounted devices and eliminate miles of cables when we move our customers over to the switch," says CEO Rob McCormick.

It will "make a huge difference in our operational expenses and the time to repair," he says.

For one of Savvis' customers, Telezoo.com, the move to a data center switch is expected to mean quicker turnaround time when Telezoo needs a load balancer, firewall or other piece of IP hardware.

"In the past, it used to take Savvis up to 14 days to purchase, install and configure a new piece of equipment for me," says Rojan Mohan, vice president of Telezoo's product development. "Very soon we'll be able to phone in the order for another firewall or load balancer or a configuration change, and have those services provisioned in a matter of minutes."

The benefits of network virtualization

Who's Nexsi?

Nexsi, a Silicon Valley start-up that raised a total of

$90

million to develop an ASIC-based data center switch, filed for Chapter 7 bankruptcy earlier this year. Nexsi introduced its Nexsi 8000 data center switch in September 2001, but the company simply ran out of money.

are not lost on network executives. But of the three areas within the data center that can become virtual — servers, storage and network resources — the network might be the toughest nut to crack.

"Our IT is extremely complex," says Cesar Vallejos, vice president of network product engineering for JP Morgan Chase, "and we desperately need to simplify it." The bank plans to use virtualization wherever it can.

But Vallejos says he needs to do a return-on-investment analysis to determine if moving to something like an Inkra switch will let him provide services at the right price for internal customers.

It's likely that JP Morgan Chase will virtualize its server farms first. The underlying network might be more difficult to attack.

"You have to consider a data center as the microcosm of telecom. It's bunches of wires connecting one rack to another. If you can virtualize that, you wind up with a far greater chance of success in maintaining domain control under one roof," Vallejos says. "But that's a lot of work."

Investment banker Morgan Stanley is hoping to deploy a virtual network pilot program in the next few months for the e-commerce operation of 600 Dean Witter retail centers that service more than 5 million investors.

"Our multiple data centers have commodity services — load balancing, SSL authentication, and firewalls to some extent," says Lance Braunstein, executive director of technical services. "These become a headache if you do them in a disparate way."

But for caching, performance and business-continuity reasons, some data centers might have to remain in regional areas. However, it might be possible to administer them in a more central way, Braunstein says.

Braunstein adds that the pilot also will look at whether a virtualized approach makes it easier to track client utilization of online services and allocate costs. "If a customer logs on to our Web site, how much of that cost is associated with our firewall, ISP or load balancer for that session. Being able to report more accurately on customer activities becomes more important than being able to allocate those costs in a sort of client-segregated way. [But] we need to prove this out through a proof-of-concept pilot," he says.

Battle of the big boxes

Company	Array Networks	Crossbeam Systems	Fortinet	Inkra Networks	Nauticus Networks	Netscaler	Surgient Networks
Location	Campbell, Calif. (www.clickarray.com)	Concord, Mass. (www.crossbeamsystems.com)	Santa Clara, (www.fortinet.com)	Fremont, Calif. (www.inkra.com)	Framingham, Mass. (www.nauticusnet.com)	Santa Clara, (www.netscaler.com)	Austin, Texas (www.surgient.com)
CEO	Don Massaro (formerly CEO of Main Street Networks)	Peter George (formerly at Wellfleet, 3Com, Nortel)	Ken Xie (founder of NetScreen)	Sanjay Dhawan (co-founder of StarNet Technologies)	Joshua Weiss (co-founder of Prominet)	B.V. Jagadeesh (co-founder Exodus Communications)	Scott Johnson (co-founder Thomas-Conrad)
Product	ArrayTM	Crossbeam X40S	FortiGate	Inkra Virtual Service Switch	Nauticus Application Switch	Netscaler Secure Application Switch	Surgient eQ2500
Functions	Server load balancing, caching, SSL acceleration, compressing, clustering, global load balancing, security.	Firewall, VPN, intrusion detection, antivirus, content scanning, URL filtering.	Antivirus, content filtering, firewall, VPN, intrusion detection, traffic shaping.	Firewall, load balancing, SSL acceleration, Web acceleration, VPN, management software, virtualization.	Layer 2/3 switching, load balancing, application switching, SSL offload, TCP acceleration, bandwidth management, virtualization.	Web optimization, Web application switching, SSL offload, content filtering, traffic management, anti-DoS protection.	Packet processing, load balancing, caching, application switching, storage processing.
Target market	Web-traffic management	Data center security	Secure content processing	Data center services	Data center networking	Web application optimization	Streaming media

One step at a time

Virtualizing network resources is more complicated than consolidating centrally stored servers or data stores because of the distributed nature of today's corporate network. There are voice and mobile systems that have to fit seamlessly into the network, VPNs to business partners and e-business customers. While financial services companies appear to be at the forefront of deploying virtualization because their businesses are driven by data, IT shops in other industries tend to be more conservative.

IDC analyst Dan Kuznetzky says that in today's economic climate most corporate CIOs have to carefully set spending priorities. "CIOs follow rules such as, 'If it isn't broke, don't fix it.' That means networks evolve over time, and that's going to continue to be the case. Companies won't virtualize their computing environments until it makes sense to do so."

In fact, the first company to enter the data center switch market has already gone under. Nexsi launched an ASIC-based data center switch in September 2001. But the company ran out of money and filed for Chapter 7 bankruptcy earlier this year.

Ruber is a freelance writer in Long Island, N.Y. He can be contacted at pruber @prodigy.net.

ProductPeek
A quick look at things for your network

Endeavors Technology's Magi Enterprise 3.0

■ BY PAUL FERRILL

Many companies have tried to implement group collaboration, only to find their efforts wasted because of difficulties with the company firewall or lack of interest from users. What's needed is simplicity — using standard Web protocols that meet the needs of the group. Magi Enterprise 3.0 from Endeavors Technology fits the bill in both cases.

Magi Enterprise 3.0 builds around a secure peer-to-peer architecture to provide chat, file-sharing and search capabilities delivered over standard Web ports and protocols. The peer-to-peer architecture simplifies the user experience by making it possible to share documents residing on the local computer with the outside world or other members of a closed group. Magi Enterprise also incorporates the Web-based Distributed Authoring and Versioning standard to augment its basic peer-to-peer file-sharing capabilities.

In a true peer-to-peer architecture you don't need any server applications — but Magi Enterprise has a server component that handles authentication and searching. The user has a relatively small client to implement chat and file-sharing functions. The server search function looks through all the public folders on each individual registered computer to build an index of searchable items.

Managing Magi Enterprise is almost too easy. Client software installation involves clicking a button on a Web page. The scary part for many IT organizations is that it runs with very little control on their part. File transfers can and will happen without going through the corporate firewall. Antivirus protection at the local computer level would be imperative to prevent any file from taking down the entire network.

Performance issues depend on the types of transfers you perform. While most users will have a machine sufficient for their own purposes, large file transfers to other machines — either on the network or over the Internet — can degrade performance. Slow network or Internet connections also will affect overall performance.

Endeavors offers Magi Enterprise on a per-user basis and as a service billed monthly per user. Overall cost depends on the number of users, but a typical installation of 1,000 users works out to about $400 each. For small groups, it's more cost-effective to use the service model.

Magi Enterprise provides tools that are extremely easy to use and work in just about any environment. In the end it comes down to the users and if they adopt it or not.

Magi Enterprise 3.0

Endeavors Technology
Irvine, Calif.
www.endeavors.com

Cost: $400 per user for 1,000 seats, $15 per month per user subscription.

Pros: Flexible and secure group collaboration tools.

Cons: Cost can be high for midsize organizations, no direct control over network utilization.

Ferrill can be reached at Paul.ferrill@verizon.net.

October 2002

The Top ISP Report

How is your dial-up ISP performing?

Is your ISP measuring up? Find out with our Top ISP Report, a joint venture between *Network World* and VeriTest's Internet BenchMark service (www.veritest.com). The data below is for October 2002; each month you can go online at Network World Fusion for the latest data.

The chart on the right shows the top dial-up ISPs in the market and how they performed in eight metrics, as determined by eTesting Labs' Internet BenchMark data. We analyzed 18 ISPs; if your ISP isn't listed among the top performers, ask it why it's not performing as well as its competitors.

Top ISPs profile, October 2002 *Network World* analysis

National retail

AT&T WorldNet · Still tops overall, but others are passing in certain categories. Not as dominant as in previous months.

Regional retail

SBC PacBell · Above average in all categories tested; tops in five out of nine categories.

Business-to-business

AT&T (BIS) · Best performance in an increasingly shrinking field of companies; tops in seven out of nine categories.

How we did it

Our data comes from VeriTest and its Internet BenchMark division. *Network World* takes the data and applies statistical analysis to rate the relative performance of each ISP compared with the other ISPs within the same market classification (national, regional or business-to-business ISP). Based on that analysis, we rank the top ISPs for the month listed. The chart lists the ISPs that perform above the average for the metrics used within that classification.

	National ISPs	Regional ISPs	B2B ISPs
Initial modem speed Measurement of the negotiated connection speed to your ISP once the call successfully goes through.	Broadwing AOL AT&T	BellSouth SBC PacBell Qwest	AT&T (BIS) XO Communications WorldCom
Average for market:	49.41K bit/sec	49.19K bit/sec	49.14K bit/sec
Average time to log on Reflects the time taken to connect and authenticate to a provider network access server once the modem takes the line off-hook.	AT&T Broadwing SBC Yahoo	BellSouth SBC PacBell SBC Ameritech	AT&T (BIS)
Average for market:	29.68 seconds	26.68 seconds	30.12 seconds
Average download time The time taken for the Web page to download, including all page content. Calculated by measuring the time from the first HTTP TCP packet being sent to the server until the last HTTP TCP connection has terminated.	AOL CompuServe Broadwing	SBC PacBell SBC Ameritech BellSouth	AT&T (BIS)
Average for market:	28.85 seconds	31.44 seconds	31.74 seconds
Average DNS lookup The time from sending the first DNS query until a response is received from any query. This reflects the end-user perception of the DNS resolution time, including retries.	CompuServe EarthLink AT&T	SBC PacBell BellSouth SBC Southeastern Bell	AT&T (BIS) WorldCom
Average for market:	349.06 msec	323.40 msec	337.05 msec
Average Web throughput The effective transfer rate of the connection. The average of these Web throughput measurements is presented in the reports. Throughput does not necessarily reflect the bandwidth of the connection, but rather the effective Web throughput experienced using a connection.	Broadwing AT&T SBC Yahoo	SBC PacBell BellSouth	AT&T (BIS) Genuity
Average for market:	5.12K byte/sec	5.2K byte/sec	5.11K byte/sec
Evening-hour call failure rate How often a modem call to the provider gets through successfully during evening hours. A failure would include a busy signal, ring no answer, modem problem or logon failure. The lower the CFR, the better.	AT&T EarthLink/ SBC Yahoo (tie)	SBC PacBell SBC Ameritech Qwest	XO AT&T (BIS) WorldCom
Average for market:	2.8%	2.2%	2.7%
Business-hour call failure rate How often a modem call to the provider gets through successfully during weekday business hours. A failure would include a busy signal, ring no answer, modem problem or logon failure. The lower the CFR, the better.	SBC Yahoo AT&T MSN	Qwest SBC PacBell	XO AT&T (BIS) WorldCom
Average for market:	2.1%	4.0%	2.8%
Average total Web fail/timeout Any error message that appears as a dialog box for the Internet Explorer browser is considered a Web page failure. Any download that takes longer than 4 minutes to complete is canceled and considered a Web page timeout. A low percentage is considered better.	AT&T/AOL (tie)	SBC PacBell	AT&T (BIS) XO
Average for market:	0.3%	0.7%	0.5%

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Jim Gallagher takes advantage of wireless connectivity emanating from campus buildings to get some work done outdoors.

JASON GROW

Going Live at Framingham State College

802.11b rollout gets high marks, but providing consistent coverage entails plenty of trial and error.

■ BY SUZANNE GASPAR

Jim Gallagher, telecommunications manager for Framingham State College in Massachusetts, is learning his lessons in wireless LAN deployment.

In 1997, the college began discussing ways to address the growing demand for computer lab seats and the use of technology in the classroom. The IT department enrolled in a wireless laptop pilot in the fall semester of 1998, after it was decided that a wireless LAN was preferable to spending $200,000 to convert an existing classroom into a 25-seat computer lab.

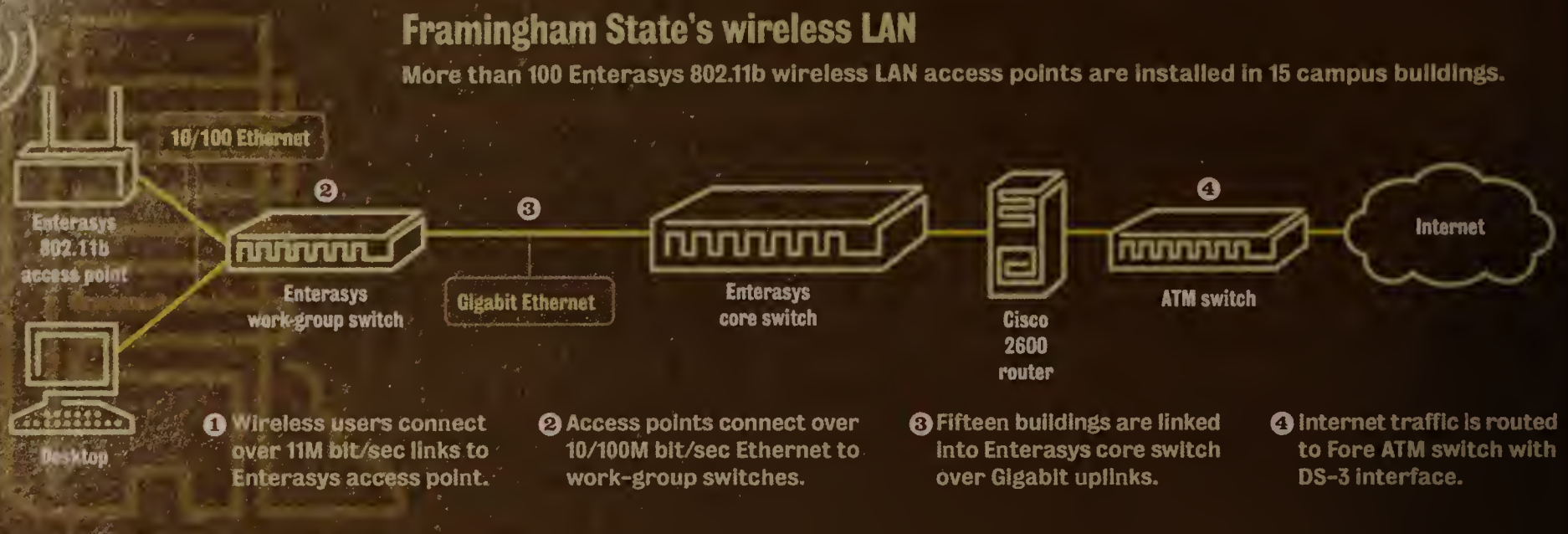
Four years later, the initial pilot of 80 laptops used in five courses has graduated into a requirement that all incoming 2002 students use a wireless laptop.

To meet that commitment, the college upgraded its infrastructure, boosting Internet bandwidth from two T-1s to a fractional DS-3, and replacing older 10/100M bit/sec closet switches with Enterasys Networks E-1 Matrix switches that have Gigabit Ethernet ports.

The college also migrated from about 30 of its Proxim prestandard units to more than 100 new 802.11b standard access points from Enterasys. Most of the RoamAbout R2 wireless access points are located on the ceiling exterior and other

Framingham State's wireless LAN

More than 100 Enterasys 802.11b wireless LAN access points are installed in 15 campus buildings.



den behind ceiling panels, are equipped with Enterasys Range Extender antennas.

All access points feed in to an Enterasys power unit adapter that connects to the new E-1 closet switches. Traffic is then Gigabit up-linked to an Enterasys ER-16 Xpedition core switch. The Xpedition switch interfaces with a Cisco 2600 router for Internet access and with the fractional DS-3 interface that connects to the campus network's Fore ATM switch.

There are no outdoor access points on campus. Yet in nice weather the quad area swarms with students sitting with wireless laptops and walking with lids up, fingering commands on screens barely visible in the brightness of the day as connectivity bleeds out from several buildings that wall in the open space. Tucked among rolling hills away from highway traffic, 3,100 students hike tarred pathways that are cloistered by a mix of century-old, red brick buildings and modern cement constructions.

Because the access points follow the 802.11b standard, students can use any vendor's client card. More than 800 college-owned laptops used by the faculty and students are equipped with cards from Lucent. The college also is offering a deal on Gateway and IBM laptops, which the IT department will support.

Today, Framingham State's wireless-LAN connectivity is available in all but one building, which is being renovated. The network supports 1,550 laptops and 67 faculty members teaching 113 laptop-facilitated courses. By 2005, all students on campus will be required to have a wireless laptop.

Gallagher says the tricky part of a wireless deployment is getting the coverage right. "There's no getting 100% quality coverage because lots of things can interfere with the wireless signal," he says. "It all depends on where you are in relation to the signal. If the laptop is turned in a different direction it may get a better signal, like using your cell phone."

Gallagher has found that the quality of the wireless signal varies per device, per location, and that certain interference affects reception. The number of access points needed depends on the amount of open space and coverage required, and on a building's construction. For example, wood and glass let the signal pass through, but the signal gets diminished if passed through concrete with embedded steel rods.

Also, different types of metal can deflect the wireless signal, such as an elevator shaft or a metal wall in a room. Even different laptop antennae — the location and design of them — affect reception. Antennae wrapped around the screen within a metal casing can be less effective.

IT initially used an Enterasys site survey as a thumbnail sketch, after which the limitations and dead spots were found. In some locations optimum reception requires that IT relocate the access point an additional 25 feet out, Gallagher says. "It's an ongoing process," he adds.

To maximize capacity, IT added more than 50 Enterasys Mezzanine adapter units to the access points located in high-density classroom and lecture hall areas. While Mezzanine adapters add capacity, IT is careful to not locate access points in close proximity, so signals don't interfere with each other.

Power connections are another big issue, Gallagher says. With the Proxim access points, an electrician was often required to install power outlets for the devices. The Enterasys access points have a spare wire that runs to the power source.

The network supports 1,550 laptops and 67 faculty members teaching 113 laptop-facilitated courses.

The college has invested $50,000 on wireless gear and $80,000 to upgrade switches, and currently spends $10,000 monthly for bandwidth. Gallagher is in the process of acquiring an authentication server. Authentication isn't required to access the wireless network but laptops need to be configured to connect. Wireless runs as a separate virtual LAN (VLAN) to the campus network with students and faculty limited to their respective domains. IT uses the Enterasys NetSite application for VLAN and port management. Users authenticate to access student resources on the campus network via Windows 2000. Otherwise they get local access to the Internet via their wireless connection.

Stretching student learning beyond the classroom is beneficial for the entire campus body. Access to online resources, educational CDs, statistical applications and presentation technologies in class enhance productivity, says Janet Schwartz, associate professor of Food and Nutrition at the college.

Framingham State is becoming an e-learning community, particularly with the widespread use of the Blackboard Learning system, a Web-based server software platform that offers discussion boards and chat functions, course management, and integration with the school's information systems and authentication protocols. Usage has increased so much that the service is now hosted on a separate application server for the school via Blackboard's ASP service model.

The wireless technology is key in changing how class instruction is done, and information is shared and communicated.

Academic Center staff and tech-savvy faculty members host various sessions to advance the skills of users, and students share application and usage tips on instant messaging lingo and CD-burning. Schwartz finds that students are more organized, and value the diversity that the presentation applications and the Internet offer, including online guest speakers. Interning students apply enhanced presentation skills to prepare educational materials for use at food distribution centers. A leasing program "has leveled the playing field," says Schwartz, because it lets students who couldn't afford to buy laptops lease them for the semester. "I had one student say that she cursed me when I gave her the leased laptop, but now she can't believe she has to give it up."

Graduate student Melanie Mulcahy participated in Framingham State's first pilot program as an undergraduate, and believes the technology is beneficial to her career because it helped her design a Web site for use in her role as a dietician.

Freshman Sean Chrobak likes the wireless laptop for working anywhere, including home on weekends. "The wireless connection is fast, and nice to have when I want to relax comfortably instead of at a desk."

We're moving toward a paperless and ubiquitous education exchange, says Alan Feldman, professor of English. But instead of a lost syllabus, the new excuse is not having an Internet connection while at home over the weekend, he says, adding that the interaction with students that happens seven days a week is valuable. "I sent half of my corrected papers at 10:30 last night. Students send me a question, and I can redirect them to the online syllabus. Students like the immediacy of work corrected, although they do find it strange to have a paper due at noon on Sunday. ■

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Searching for balance

IT professionals find ways to bring harmony to work, personal life.

■ BY JENNIFER MEARS

For years, Kenneth Stott would leave his house in Princeton, N.J., at 5 a.m., travel to his job on Wall Street and not return until 10 p.m.

"It was brutal," Stott says. "And it was lucrative."

It also became too much.

Stott, who has held many technology roles on Wall Street, the last as vice president of IT for the finance group at Bankers Trust, realized that his fast-paced work life was leaving him little time for his family.

"My oldest son turned 10. I started thinking I really didn't have that much more time with my kids, not to mention my wife," he says. "It was way out of whack."

So in 1996, Stott left the high-pressure world of Manhattan, got a job as CIO at Koch Industries and moved his family to Wichita, Kan.

But while his work life became more manageable, Stott soon realized that the small-town feel of Wichita wasn't what he or his family expected. After three years at Koch, which went through a downsizing while he was there, Stott jumped at the chance to take a job with Azurix, a water subsidiary of Enron.

He moved to Houston in 1999 to become CIO of Azurix. He left Azurix two years ago but stayed in Houston to become CTO at Tympany, a start-up that develops hearing diagnostic equipment and services.

While it took some time for him to get there, Stott says he has finally found the perfect way to balance his professional and personal life. At Tympany, Stott works flexible hours so he can be with his family when he needs to and do his work during the hours that are best for him.

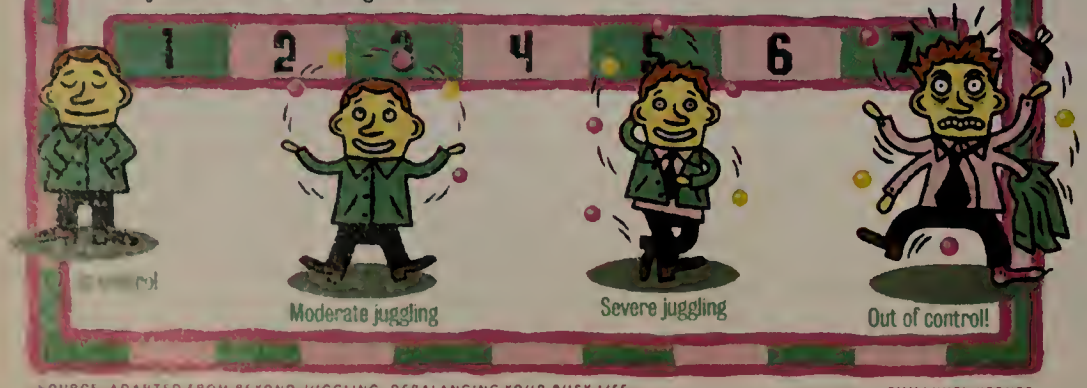
Stott is not alone. IT workers increasingly are looking to manage their work lives so they don't lose focus on what's really important: their families and personal goals.

Diagnosing the problem

Are you a juggler? Check all that apply.

- ☐ My workdays are tightly scheduled, and my weekends aren't much different.
- ☐ Time spent with my partner, children and/or friends often feels rushed.
- ☐ I manage to stay on top of things, but I don't know how long I can keep it up.
- ☐ Quiet time for myself — for reading, exercise, hobbies — is hard to fit in.
- ☐ I use some of my vacation days to run errands and catch up on chores.
- ☐ I feel overtired or stressed out more often than not.
- ☐ My life is certainly not boring, but it's also wearing me out.

Plot your score on the following continuum:



SOURCE: ADAPTED FROM *BEYOND JUGGLING: REBALANCING YOUR BUSY LIFE* EMMANUEL KERNER

The trouble for some IT professionals is that today's electronic environment sometimes provides a tether to their job from which they can never escape.

"What we notice with IT people is they've got a unique challenge. In some ways it's harder for them to separate work and the nonwork part of their lives because most of them can literally do their work from just about anywhere," says Kurt Sandholtz, a career development consultant and one of the authors of *Beyond Juggling: Rebalancing Your Busy Life*.

But technology also can be a benefit, Sandholtz says, because it provides IT pros with the option of working remotely or putting in flexible hours. The key is to make sure these strategies don't result in more work.

Sandholtz points to a network systems analyst for a financial firm who works remotely from Park City, Utah.

"He talks about working late, but he also talks about skiing fresh powder in the morning," Sandholtz says. "He's an example of using techflexing the way it is intended to be used: to increase your balance, rather than allowing technology to continue to dominate your life."

Techflexing is one of five alternative strategies that Sandholtz and his co-authors identify as the best ways to achieve work/ life balance. The authors studied work/life patterns over a five-year period, and found that for many people traditional approaches to balancing work and personal life was a juggling act they just couldn't sustain.

The answer is to determine where your priorities are and then build a lifestyle that works for you, Sandholtz says. Approaches such as bundling, in which you achieve two goals with one activity, and alternating — switching between periods of intense work and nonwork — are two that might be particularly useful for techies.

Sandra Wheeler, an information specialist at Pfizer, uses techflexing and bundling to balance her career and her family.

"There were times that I'd be at work until 11 p.m. and my husband would call and say, 'Are you coming home today,'" Wheeler says. Once she had children, she says, "it changed my perspective on what's really important in life."

Possible remedies

The book *Beyond Juggling: Rebalancing Your Busy Life* suggests five alternative strategies to work/life balance.

Alternating: Toggling between periods when work dominates your life and periods when work takes a back seat.

Outsourcing: Delegating some routine tasks, such as housecleaning or yard work.

Bundling: Engaging in fewer activities but combining goals, such as working out with a friend for exercise and social interaction.

Techflexing: Using technology to remove the constraints of a 9-to-5 work day so that you can work anywhere, anytime.

Simplifying: Discarding the notion that earning or owning more is better, and making sacrifices.

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These days, Wheeler is upfront about her nontraditional schedule, opening her calendar to bosses and colleagues to let them know when she might be taking her children to the dentist or participating in a school activity. She usually makes up that time at night or on weekends.

"The biggest thing for me is meeting deadlines and exceeding them," Wheeler says. "If I can do that, nobody questions where I am. But if you start missing deadlines, or if your work isn't what it used to be, then they're probably going to keep an eye on you a little bit more."

Catherine Farrell, a regional vice president at workplace consultancy DBM, says IT professionals are asking to work flexible hours, use job sharing, or work from home. Employers, for the most part, are receptive.

An employee might have to take a pay cut or take a job with less responsibility to get the flexibility desired. But it's a trade-off many are willing to live with.

Stott says he's not earning as much money as he could be if he still worked on Wall Street, but he has more time with his family.

"A good friend of mine continues to live the lifestyle that I left. And he has made more money," Stott says. "But I make enough. I've got . . . all the things I really want."■

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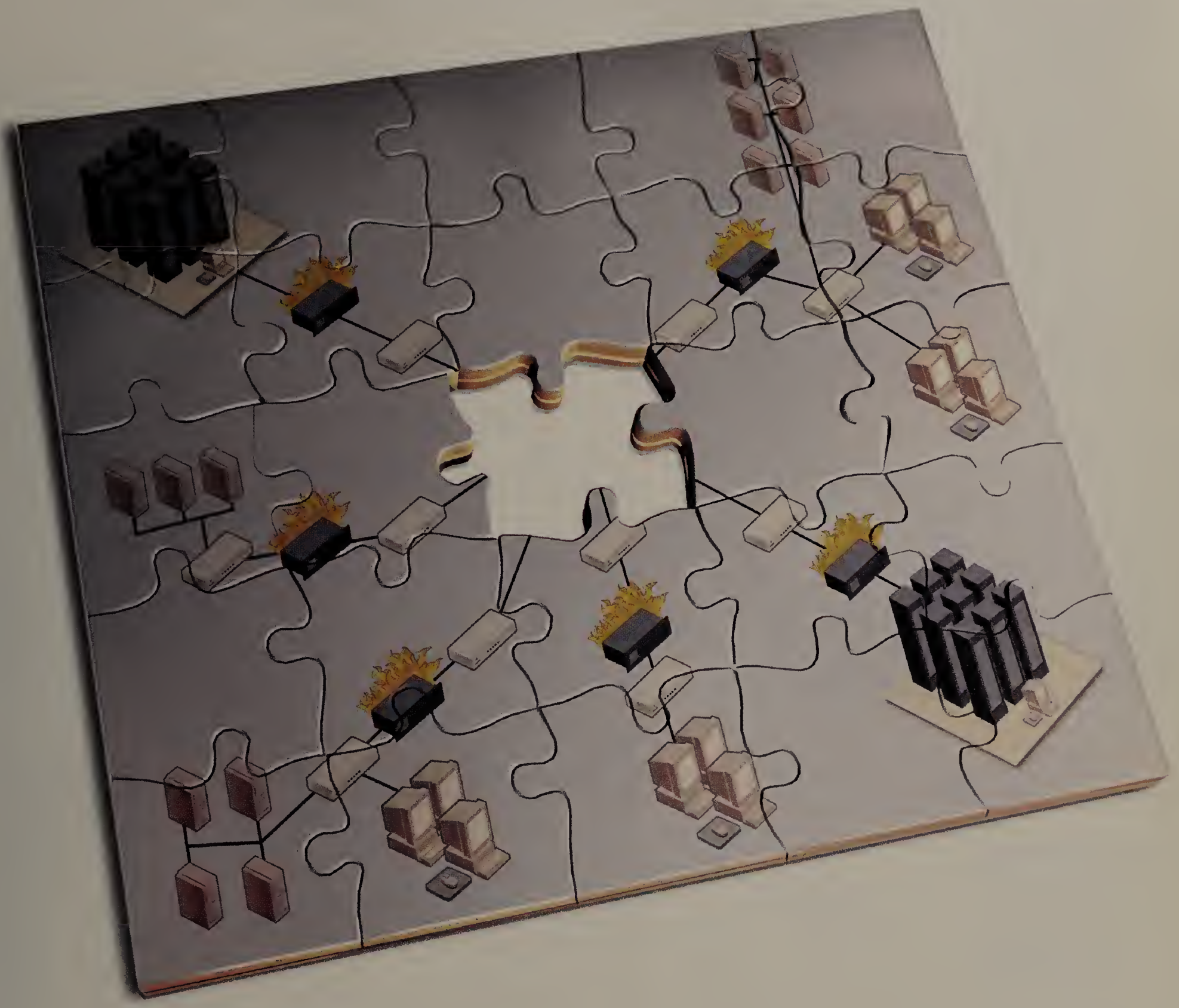

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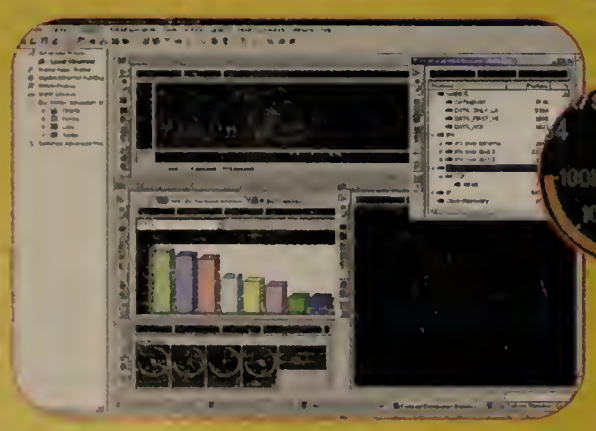

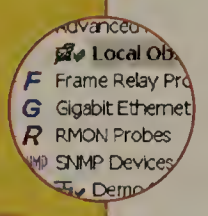

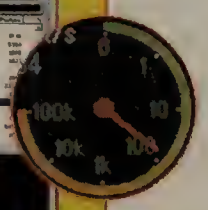

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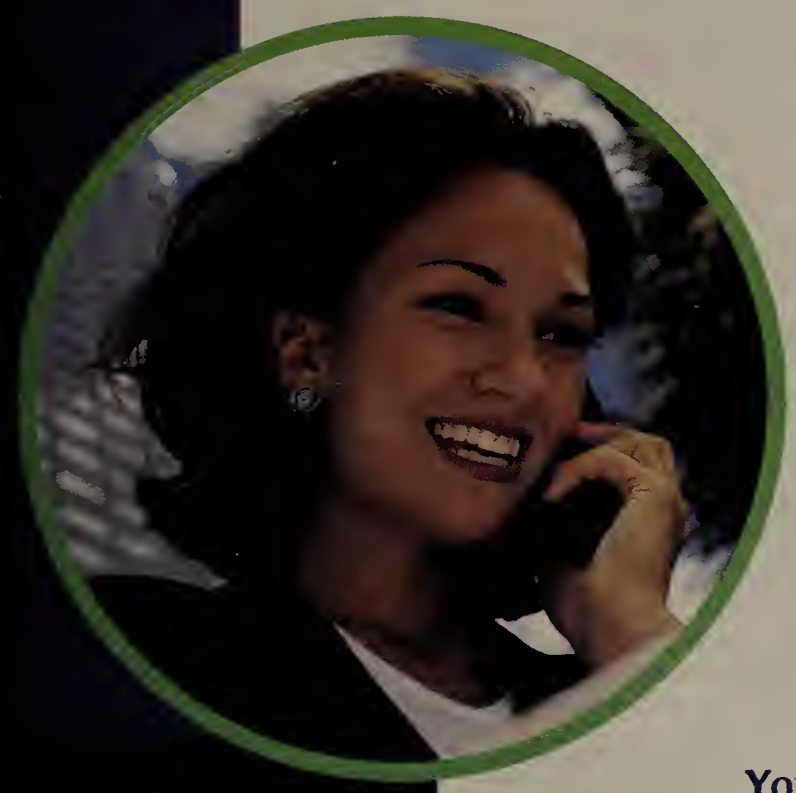

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*Indicates Regional Demographic

Tripwire widens reach of data-integrity offering

■ BY ELLEN MESSMER

Tripwire for Network Devices 2.5 can monitor and report any attempts at unauthorized configuration changes made on Nokia and NetScreen Technologies firewall appliances.

PORTLAND, ORE. — Tripwire has broadened the number of network devices it can protect with its data-integrity software designed to prevent tampering of configuration settings in firewalls, switches and routers. The latest version of the product, Tripwire for Network Devices 2.5, also changes the way the software does reporting and alerting on what it monitors.

Tripwire for Network Devices 2.5, which now runs on Windows XP and 2000, and Solaris servers, can monitor and report any attempts at unauthorized configuration changes made on Nokia and NetScreen Technologies firewall appliances. By next month it also will support switches from Extreme Networks and Foundry Networks. Tripwire has added a way for its management console to generate data output via XML formats. In addition, Tripwire data-integrity reporting product now can generate its log reports for import into Crystal Reports and Microsoft Excel.

The earlier version of Tripwire for Network Devices could monitor unauthorized attempts to change the Cisco PIX firewall, but couldn't perform the type of auto-restore backup Tripwire does with the Cisco IOS router, for example. With the latest version, customers can manually restore settings in the PIX firewall if that data is found to be lost after Tripwire performs an integrity check. Sometimes power outages can wipe out equipment settings.

"Customers told us they didn't want auto-restore on the firewall due to concerns about its sensitivity as a security application, but they did want an easy way to make the choice to manually restore setting," says Alex Bender, Tripwire product marketing manager.

As Tripwire expands the number of switches and security devices on which it can do data integrity checks, intrusion detection and autorestoration, it is forging close partnerships with other vendors. Work now being done with Internet Security Systems might pan out into support for intrusion-detection systems by Tripwire as well, Bender says. ■

Hospital

continued from page 1

Beth Israel Deaconess has been singled out among healthcare corporate networks for its cutting-edge use of Web-enabled and wireless applications.

Last week Halamka told the story of his network woes at a meeting of healthcare CIOs held at Massachusetts Health Data Consortium, a nonprofit corporation aimed at developing and disseminating healthcare information. He detailed the cause, effects and resolution of the hospital's network problems.

The contagion turned out to be compute-intensive analytic software. When a researcher launched it, the software triggered enormous levels of network traffic. The overload slowed systems significantly, causing intermittent problems with e-mail, data entry and Web access to patient records and prescriptions.

The network interruptions occurred every four to six hours, so the hospital decided to revert to paper processes to minimize the disruption caused by having to switch between automated and manual processes every few hours, Halamka says.

Additional details about the cause of the network failure were not available.

Analysts say such incidents might become common in healthcare facilities — which have a history of underinvesting in IT, compared with other industries — as their network systems accumulate and age.

Gartner reports that healthcare companies devoted an average of 2.5% of revenue to IT spending in 2002, compared with 8.9% among telecom companies and 6.6% among banking businesses. Concerns about the business value of IT and the maturity of healthcare solutions are two inhibitors to healthcare IT spending, according to Gartner.

As a result, a network outage might not be much of a problem at many hospitals because most haven't automated critical patient care services, says Ken Kleinberg, vice president and research director at Gartner.

At as many as 90% of healthcare facilities, doctors still carry paper charts during rounds, documents are sent through pneumatic tubes, and patients still work through stacks of forms in triplicate, he says.

"Healthcare is not as automated as a lot of industries, so ironically, when there are problems, healthcare can often work around them," Kleinberg says. Hospitals are least-automated in the areas of patient safety, he says. "But those that are automated in those areas have taken on a greater risk — for the greater reward of providing more advanced patient care," he says.

Beth Israel Deaconess' IT department is ahead of the adoption curve. It has taken broad steps to Web-enable clinical systems. Combined, its systems handle 40 terabytes of information daily.

Systems affected by the network problems included:

- A Web-based prescription-ordering system.
- An electronic whiteboard in the emergency room for tracking patient status, which doctors can access over the Web and wireless LAN.
- Web-enabled clinical information systems that offer online access to clinical records including problem lists, medications, allergies, notes, electrocardiograms, labs and X-rays.
- PatientSite, which lets patients schedule appointments, renew prescriptions, request a referral and communicate with their caregivers via the Web.

"No changes in clinical care occurred. Surgeries proceeded as usual, all transfers and admissions were accepted as usual."

Dr. John Halamka
CIO, CareGroup Healthcare Systems, on the organization's recent network problems

So the hospital reverted to its paper-based systems. Employees printed records and manually monitored prescription doses. Lab tests were done as normal, but results were sent to doctors on paper instead of via computer, Halamka says.

Meanwhile, the IT department called in a team of network specialists from Cisco to help repair the network systems. Through all this, there was no disruption of customer services and patient safety never was jeopardized, Halamka says.

"No changes in clinical care occurred," he says. "Surgeries proceeded as usual, all transfers and admissions were accepted as usual."

The Emergency Department was diverting patients for two hours one day, but, contrary to other press reports, this was unrelated to the network outage, he says.

The incident at Beth Israel Deaconess underscores the importance of back-up systems.

"The benefits of automation are real, but the risks go up. If you're going to automate, you have to also find the money to put the back-up systems in place," Kleinberg says.

"Whatever problems were experienced at Beth Israel, you can be sure this is just a harbinger of what's to come as healthcare more fully automates and starts to rely on these systems for clinical capabilities," he adds.

Halamka's candor with his peers suggests he wants to spread the word about potential risks of automation.

"It is not surprising to those of us who know John that he is willing to share his experiences for the greater good," says Meg Aranow, vice president and CIO at Boston Medical Center.

"He is very committed to improving the discipline of healthcare computing," she adds. ■

■ **Network World**, 118 Turnpike Road, Southborough, MA 01772-9108, (508) 460-3333.

Periodicals postage paid at Southborough, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #40063800. Network World (ISSN 0887-7661) is published weekly, except for a single combined issue for the last week in December and the first week in January by Network World, Inc., 118 Turnpike Road, Southborough, MA 01772-9108.

Network World is distributed free of charge in the U.S. to qualified management or professionals.

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Nonqualified subscribers: $5.00 a copy; U.S. - $129 a year; Canada - $160.50 (including 7% GST, GST#126659952); Central & South America - $150 a year (surface mail); Europe - $205 a year (surface mail), all other countries - $300 a year (airmail service). Four weeks notice is required for change of address. Allow six weeks for new subscription service to begin. Please include mailing label from front cover of the publication.

Network World can be purchased on 35mm microfilm through University Microfilm Int., Periodical Entry Dept., 300 Zebb Road, Ann Arbor, Mich. 48106.

POSTMASTER: Send Change of Address to **Network World**, P.O. Box 3090, Northbrook, IL 60065.

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BackSpin Mark Gibbs

Guilty by content

A couple of weeks ago Gearhead discussed a piece of software called Snitch that looks for and reports on "dubious" content and can be used to clean things up.

The reason such tools exist is that once connected to the Internet, the tidal wave of pornography you will receive — whether or not you actively look for it — guarantees you will have content stored on your PCs with which you and the PC's users might not want to be associated.

And that content is getting evermore tawdry. Where once porn spam was purely text screaming "Check out our hot babes!" today it is HTML mail with animated graphical content and even sound.

And pop-up ads are another matter altogether. There are sites that link to sites that pop up ads that in turn pop up ads that pop up yet more ads that frequently contain people doing things that you might have fantasized about but are often things (or people) that you hoped never to see doing whatever it is they're doing.

But even if you delete the e-mail messages or close the pop-ups, the content is more often than not still stored somewhere on your system. It might be in your browser cache, in a temporary work file, or deleted but not purged in your e-mail client or in your trash folder. It might also be textural and stored in a history URL.

Now this content is problematic for several reasons. First, it is always embarrassing when somebody uses your Web browser and goes to Google to search for "network diagnostic tools" and as they start to type the autocomplete feature immediately offers "naked hot babes covered in butter." Rather a giveaway, isn't it?

Second, if pornographic content is displayed in a workplace, legislation in support of horrifyingly rampant political correctness — in the guise of sexual harassment laws — can be invoked by anyone who has any negative reaction to the content.

Third, there is a lot of content on the Internet that is illegal and which could, through the mechanisms we have discussed, wind up stored on your computers. Just having the content — no matter how you got it — could have significant consequences.

It is interesting what pornographic content might be considered illegal — check out an informative article on the Electronic Frontier Foundation's Web site, "The First Amendment, New Media and the Supreme Court" (www.nwfusion.com, DocFinder: 3240).

The one type of content that is guaranteed to get you into serious hot water is child pornography. No matter how you came by it, to have it on your computer appears to be a one-way ticket to a lot of trouble. An FBI agent was quoted in a *Wired* magazine article on online child pornography as saying, "One click, you're guilty. . . . A federal offense is that easy."

What is particularly worrying is that should you discover child porn on your computers you would, as I understand it, be advised to get rid of it quietly. Apparently the response of the FBI if you call up and say that you have discovered what you think is child porn will be a number of agents who turn up and remove your PCs.

I have read a number of accounts where impounded PCs are returned months or years after being taken away, something that would put a real crimp in operations for a small business let alone the business of someone working out of a home office.

I find it very worrying that we seem to be creating an environment where trying to be a responsible citizen could not only be to your disadvantage but also, if the FBI officer's quote is true, actually get you branded a criminal!

So if you start scanning the PCs in your organization for inappropriate and/or illegal content and you find it, who will be blamed? How will you and the "culprit" be affected?

In short, what will you do?

Thoughts to backspin@gibbs.com.

'NetBuzz News, insights, opinions and oddities

A payment option for nervous Nellies

Some people would rather hand their baby to Michael Jackson than fork over a credit card number to make an online purchase.

Call them prudent or paranoid — about the credit cards, not Jacko — but they are a significant slice of the Internet user community. They also represent a potentially golden business opportunity for PaymentOne — known until recently as eBillit — which provides the customers of ISPs, content providers and purveyors of digital goods with a less frightening payment method.

That alternative? . . . Charging stuff to your local phone bill.

"Only 65% of U.S. households have a credit card and only 15% say they are truly comfortable using it online," says Don Teague, vice president of marketing at PaymentOne. "There is still a 25% to 50% abandonment rate in most Internet-related sites during registration, specifically as the consumers get closer and closer to the cash register."

PaymentOne says that 3 million consumers pay for Internet access through the company's service, which is used by about 50 clients, including AOL, United Online, BlueLight.com and YP.net. The company has 1,400 billing and collection relationships that make its service available to 92% of households and businesses.

"In today's world, if our phone-bill option is plugged in as an additional payment option, we will guarantee a 25% lift in net new subscribers," Teague boasts.

The phone bill business makes a lot of sense, and not just for the faint of heart. The convenience alone will attract many to the option. Most everyone trusts the phone company, and most everyone values their dial tone enough not to ignore the tab.

Might we see phone bill payment options move beyond services into hard goods?

"Well, probably not refrigerators tomorrow, but we definitely are moving into digital goods and services," Teague says. "Music downloads, online games, periodicals. I could see the day when we will do your subscription to the Internet version of *The Wall Street Journal* and you'd get your paper version also."

Couldn't Amazon.com ship me a book and put the charge on my phone bill?

"Not today, but it could happen in the future," Teague says. "The barrier would be the phone companies' desire to participate in fulfillment, because in the digital world we know when things were delivered."

If things get any worse in telecom, that desire won't be long in coming.

Rudy to the rescue . . . again?

The "Rudy Giuliani Is Our Savior" revival-show bandwagon continues to gather momentum throughout the high-tech industry . . . for reasons that remain remarkably foggy.

Latest to jump aboard is David Matlin, a leading WorldCom investor/vulture capitalist, who reportedly wants to sweep up at least a third of the bankrupt company's bonds to retain the right to appoint post-bankruptcy board members. According to a report in *The Wall Street Journal*, this would precede the appointment of the former New York mayor as chairman.

"What's not to like? He's 'Man of the Year,'" says a necessarily cautious Michael Capellas, who was just named WorldCom CEO. "We are going to see if there is a role for Giuliani. We are moving forward and assembling a world-class board."

What's not to like?

Let's start with the fact that you've got to "see" if there is a role for a politician turned motivational speaker who has no relevant business experience. That seems like an odd starting point for a company that just tabbed an executive, Capellas, who also has no experience in the telecommunications industry.

Of course, Giuliani is immensely popular and could help polish up the WorldCom name. Perhaps that's enough.

Comments? The address is buzz@nww.com.

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